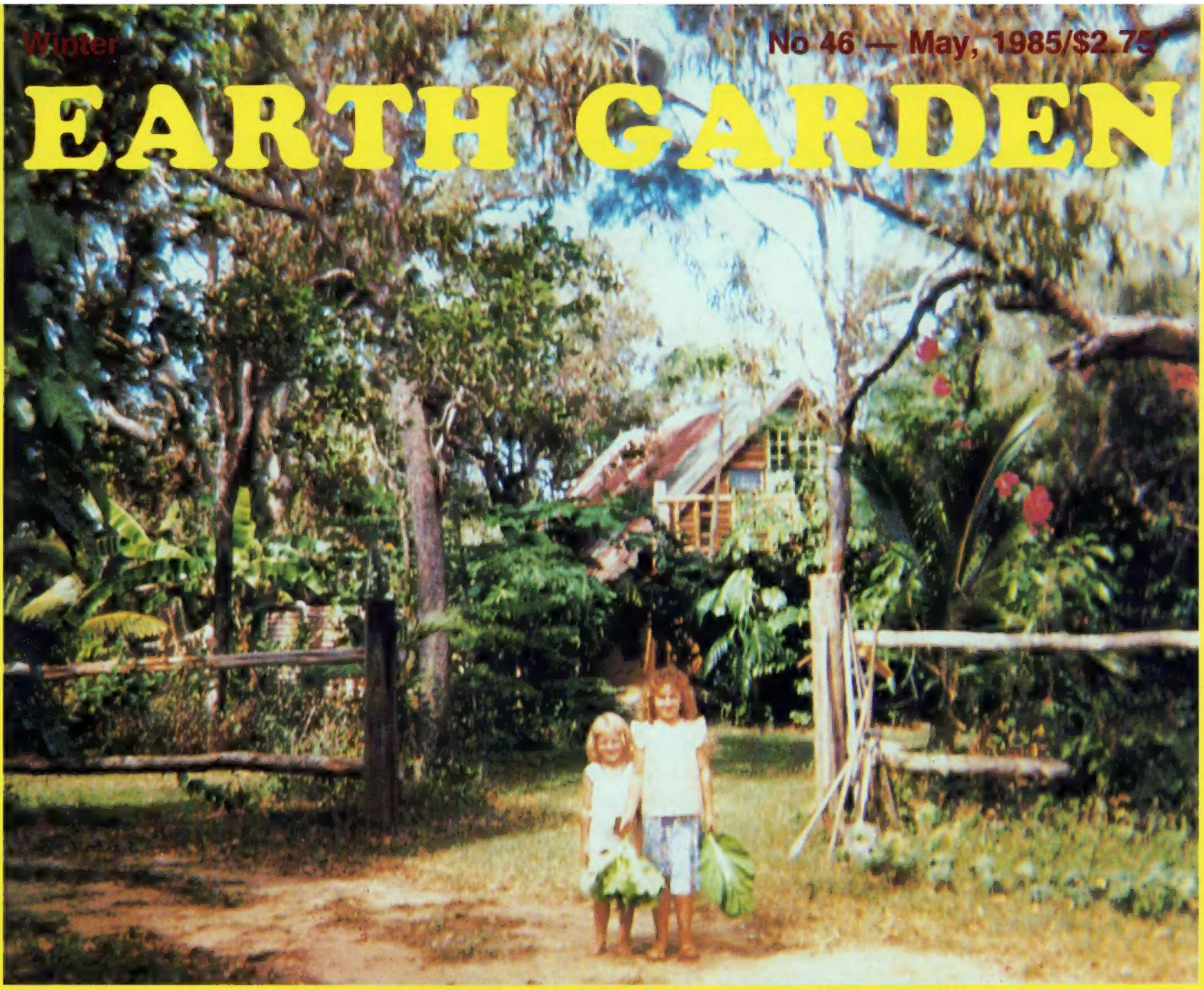
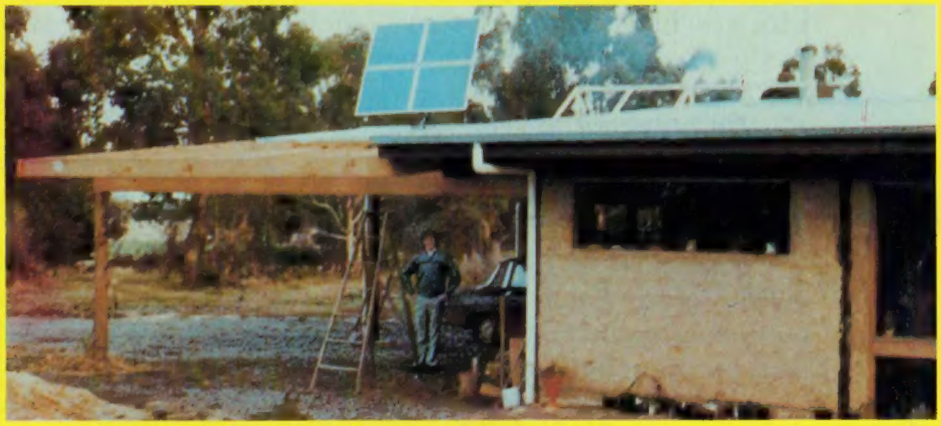
Winter

No 46 — May, 1985/$2.75*

EARTH GARDEN





Windworks

- *Electricity from the wind* — Solar trackers, Tamar water turbines, the bright white light (from Edison to the Eighties), lights in the bush, super Krypton lamps, energy updates and access, house water from a 12V bilge pump, Watts up, Doc?
- *Owner built composting toilets,* urban homesteading, lessons from the Maryborough fires, vegie patch revival, growing algae, car-less in the country, bush women, Permacroft town-edge community, aerial photos, growing plants and children in North Queensland
- *Plus: buckwheat recipes, a taste of Tanzania, herbal shampoo, dried flowers*

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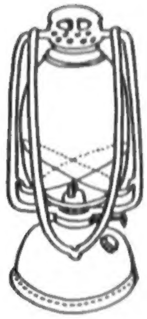

HARD TIMES HANDBOOK

Survive and thrive in 1985!

It's a year since our HARD TIMES HANDBOOK was first published.

At that time 9.5 per cent of the Australian workforce could not find a job; today 8.8 per cent remain unemployed. Since then the value of the Australian dollar has fallen by 30 per cent against the US dollar. This has already been reflected in a rise of 4 cents per litre in the cost of petrol and will lead to renewed inflation as prices of imported goods go up.

It looks like being a grim and difficult winter in 1985.

What can you do? In this paperback book we have collected in one place a range of skills, strategies and short-cuts to help you stay warm, healthy, and well fed for the least amount of money.

Keep warm. Save on energy and fuel bills, cook with a wok, pressure cooker or a fireless hotbox, knit a woollen Monmouth cap, make recycled newspaper logs and collect city fuel to burn in your potbelly stove.

Stay hungry, stay foolish. There are 150 recipes for cheap, healthy tucker which include sustaining soups (such as chicken, minestrone and Julienne), home-made bread, pies (lentil, spinach and rabbit), herb teas, pancakes, rice puddings and yoghurt.

Be prepared for emergencies. HARD TIMES HANDBOOK tells you how to cope with emergencies like blackouts (what if the freezer fails?) and food shortages (two week's food stockpile), how to make money without a job, grow food plants in your backyard and manage your food supply.

A manual of 180 household hints tells you how to make candles, soap, wax polish, glue, slush lamps, household cleaners and insect repellents. This new approach to city living can help anybody become more self-reliant and less dependent on the mainstream economy.

HARD TIMES HANDBOOK
Keith & Irene Smith
Nelson, 1984, 204 pages, illustrated by Elaine Norling. Price $7.50 posted anywhere in Australia. Fill out the order form on page 58.

Earth Garden, started in 1972, is the original Australian journal of self-reliance. It is intended as a friendly forum of practical ideas, shared knowledge, sources and alternatives.
It's about putting a roof over your head, growing your own food, using alternative energy and surviving — and thriving — in the city or the bush and the inner changes which follow when you are in tune with nature.

Earth Garden is published each quarter in mid-February, May, August and November. Annual subscription is $11.00.

Published and edited by Keith and Irene Smith.
Illustrations by Elaine Norling.

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Let us lead you up Earth Garden's path to the good life!

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EARTH GARDEN 46

The cover

Front: Jasmine and Zamia Selman are growing like the lush tropical plants at Cooktown, North Queensland. *Left:* Modified 2 kW Dunlite wind generator erected by Survival Technology at Foster, Victoria: *Right:* Kirby solar tracker mounted on a mudbrick house at Bunninyong, Victoria. *Back:* Lindsay and Lisa Corben's elegant composting toilet.

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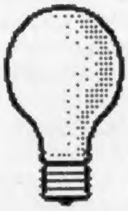

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Growing plants & children

Tea-Tree Gardens,
Cooktown, N. Qld
By John Selman

Maureen and I came to our place 11 years ago. We came in an old Holden, bringing some basic tools, a tent, limited trade skills and plenty of enthusiasm. We were led by a desire to create a more meaningful life for ourselves closer to our roots in the earth — 'going back to the land'.

Our land, 24 acres, is almost devoid of topsoil, being a claypan of an adobe type yellow clay with some quartz and ironstone gravel mixed in. It is fairly well covered with native grasses and a variety of trees, eucalypts (box, bloodwood, white gums) and melaleucas (broad and narrow leafed tea trees) and other understorey shrubs.

We have established a pleasant garden over a few acres by interplanting the native trees with a broad range of fruit trees (tropicals, exotics and citrus), ornamental shrubs, palms and vegetable patches.

The ground has to be broken well since it is hard packed clay. Good sized holes are dug where a tree is to be planted. The soil (if you can call it that) is enriched with manures, leaf mould, sand, dolomite and wood ashes. The contents of our toilet bin is buried at the bottom of these holes and a few months later an established young fruit tree is planted in the mixture. By means of the organic methods of manuring, mulching and composting we have achieved quite satisfying results in a difficult soil situation. Many of our seedling fruit trees (soursops, five corner, limes) were bearing their first few fruit at three years of age.

At first, our only water was a semi-permanent waterhole in the creek which runs through one corner of our place, not enough for our gardens by any means. We carted water for a couple of years to supplement this supply then we got the dam built on a nearby gully. Prickly leaf tea tree has regenerated with 3-4 metre high growth around the outer margins of the dam. Native fish, eels, catfish and freshwater mussels are found in the dam, as well as a horde of other 'beasties'. Nature provided them. On top grow blue water lillies and various water weeds.

Though only small, the dam has made it possible for us to survive and develop a garden. Water is pumped by petrol motor into a hand-built 3,500 gallon ferro-cement tank perched on top of a 12 foot mound of earth dozed up from the dam. The water runs by gravity feed, through a 2 inch poly pipe underground, thence into 1 inch poly to various outlets at convenient places in the grounds. We use low pressure sprinklers during the dry season (September to December), spot watering our trees and vegetable patches.

The wet season (January to April) is one of our great blessings here in the north, as it 'tops up' the water table every year and also refills our dam quite adequately. For four or five months of the year watering is a negligible task as Mother Nature does it for us. Then into winter the water needs of plants are lower. It is only in the harsh, hot, dry season that we feel the pressure of 'keeping up with the watering'. At least we can always be sure that the dry is followed up each year by the monsoon season.

The dam did go dry one year and we survived on our tank water until the rains came. When we eventually have a windmill erected over our bore and that extra water feeding into our system, we'll be sailing easier.

We have kept bantams and ducks for many years. They are fed on bought cracked corn and provide a supply of quality eggs and some meat (bantam roosters, ducks and drakes). It takes about 20 minutes a day to care for them. The bantams are kept in an enclosed pen (roofed from hawks, eagles and goannas). They are also fed on weeds, greens and fruit scraps daily (almost) and are kept on the deep litter system. We never have disease problems and they breed well.

The Muscovies have a large pen with a pond and a drinking water trough, both concreted. There are a few fruit trees, passionfruit vines, pawpaws and pea trees *(Cajanus cajan)* and others trailing out of their pen. They love the pea tree seeds and crack the dry pods in their beaks and pounce onto the seeds as they bounce out.

Several beehives keep us supplied with honey of varying shades and flavours. The native flora is unpolluted and provides excellent forage for our bees while the surplus honey is a valued bartering item.

We built our house, with help from friends, out of the adobe clay in which we grow our plants. It makes beautiful Cinva Ram rammed earth bricks of a dull yellow colour. The timber in the structure is all locally sawn messmate, blue gum and acacia cedar. It is a simple, small house, 10m x 5, which feels good to live in and has been the centre of our family activities for many years now.

The ground floor is open-plan design with only a four-foot high wall separating the kitchen from the living area. We have two bedrooms within the steep gable roof. Each room opens out onto a balcony, which is quite pleasant and offers a different aspect of viewing our flat, though treed, block and its gardens. A ground level verandah on one side of the house adds more living area. At the kitchen end of the house we've built a separate cookhouse containing ye old faithful wood stove, washing-up sink and firewood storage. It is separated from the house by a 1.5 metre wide breezeway, ideal in our tropical climate.

As well as creating a life for Maureen and myself here, three other lives have grown alongside the gardens, our children, Jasmine (10), Zamia (6) and Ebony (2½). They are flourishing in this environment. For convenience and for their social development (as well as learning) the girls both go to the local school which is 8 miles away by bus.

For 9½ years kerosene and candles provided us with night lights. Now we have the luxury and convenience of power from two solar panels. We shall reap the benefits of this investment in years to come! Having lived in this tropical environment without refrigeration for several years we don't feel deprived in anyway. It does mean that we can't keep leftovers, so the chooks, ducks and dog do well at all times.

Our original aim of total self-sufficiency in food and simple necessities, as well as being highly idealistic, has been difficult to achieve in this spot with limited finances, simple hand tools and poor soil conditions. We do buy certain foods and 'necessities' from outside our place, but we have had a varied supply of fresh fruits (pawpaws, soursops, five corners, lemons, limes, passionfruit) and vegetables (tomatoes, lettuce, cucumbers, broccoli, corn, okra, beans, New Guinea beans, zucchini) through the seasons throughout the years . . . fresh fruits and foods to give health and enjoyment in the eating.

A word of encouragement

I would write this as a word of encouragement to those people who wish to create a new life for themselves in the bush. It doesn't just take lots of money, top professional or trade skills, or rich soil, though some of each would certainly help.

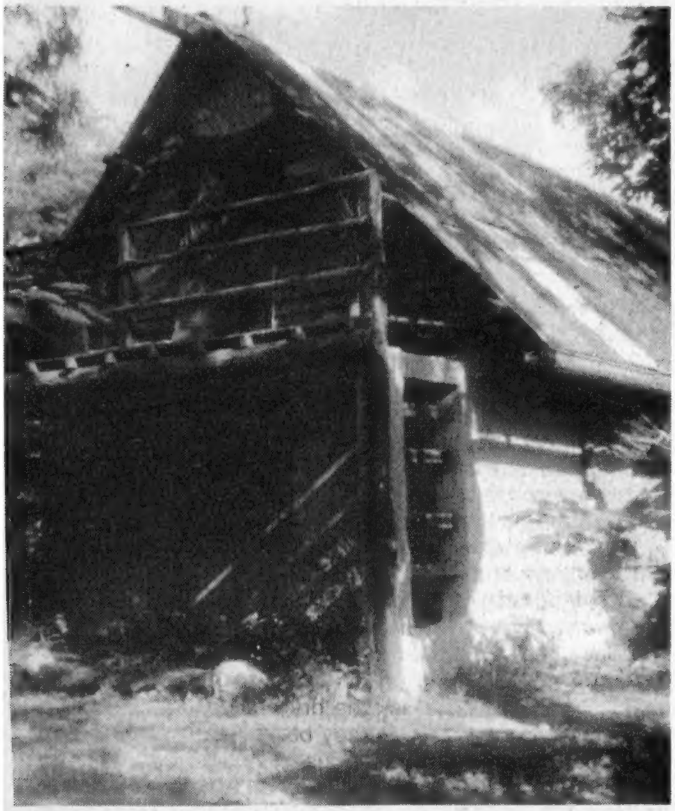
It does take a fair proportion of hard work, which in turn requires self-motivating self-propulsion.

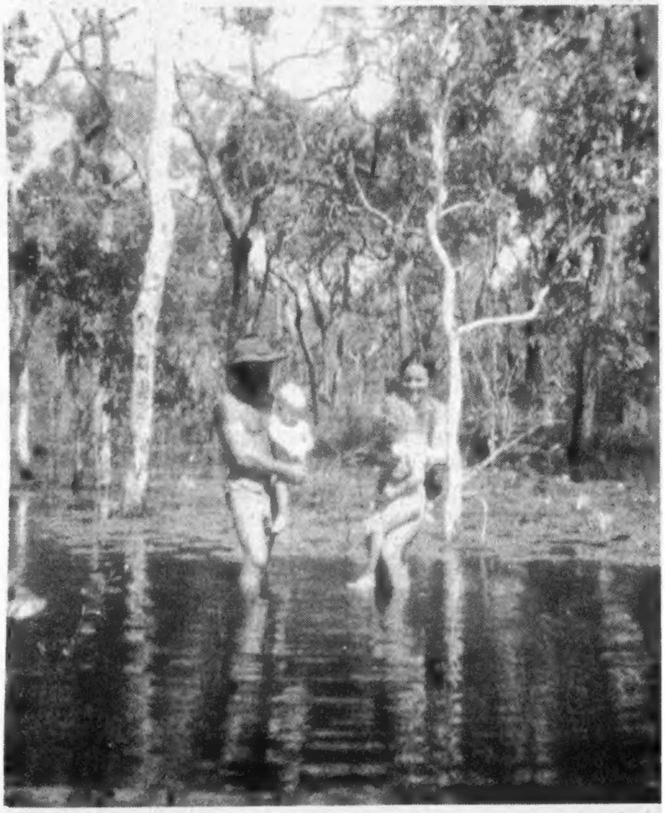
- Getting projects in hand and other tasks to be done in the right order of priority.
- The ability to clearly think out the approach to a job.
- To build it in your head and on paper before you actually begin.

It also takes a willingness to read, ask, learn and teach what you know. It takes a persistence nearing the tenacity of the bite of a tropical green ant.

So if you want it badly enough, be single-minded — and go for it! Sort out your wants from your needs, then simplify your needs. You too can actually survive to enjoy the benefits of a simply created natural lifestyle.

Self-sufficiency cannot be bought with dollars as it is in the daily living of its ideals that it is achieved.





A bird's eye view

by Brian and Anna Priest

When we bought 100 acres of bush on the north coast of New South Wales, we spent days 'exploring' it from end-to-end. We zig-zagged across it, beat our way through the undergrowth, walked around it in circles and pored over large-scale maps of the area.

We literally could not see the wood for the trees. Nevertheless, we figured we knew our property pretty well. That was until we discovered aerial photography and found out the lay of the land the easy way.

With conservation uppermost in our minds, we approached the task of clearing and road building very carefully. We used aerial photography to plan our farm strategy. By following the paths of watercourses we were able to plan our dam sites and avoid building costly roads in the wrong places. It isn't easy from the ground level with a quarter of a million trees in the way!

We also discovered old logging trails which, after a little clearing, we were able to use to get around the property. We eventually had our photograph blown up to half a metre square and used it as a 'living map' on which to base our future planning.

A friend bought some wild country nearby and found he was unable to walk through it without coming across a 'long winding lagoon' surrounded by rushes over two metres high. An aerial photograph showed that there were two separate waterways. He was then able to walk from one end of the property to the other without sinking up to his armpits in water, or dodging in and out of his neighbours property.

What to look for

There are, of course, many other uses for aerial photographs of the land, such as:

- locating suitable areas for home sites, other buildings and windbreaks
- determining flood-prone areas, seepage and low-lying areas
- picking up signs of erosion
- finding watercourses, minute stream patterns and planning dam sites
- determining types of vegetation, low intensity grazing, tree lots, etc
- locating bush tracks, logging trails and stock routes
- planning access roads and bridge construction
- making assessment of potential land use and long term use
- planning farm strategy
- showing up previous mismanagement
- valuation purposes

In three dimensions

Getting a bird's eye view is one thing, but think of the possibilities if you could view it in three dimension! This is easily achieved with an extra aerial photograph taken in sequence to the one you would already have, plus an inexpensive pocket lens stereo viewing scope (about $20 from Army Disposal stores). Most Lands Departments and Soil Conservation Services have more sophisticated scopes and will let you use their equipment.

How it works. Viewing pictures with the aid of a scope for the first time is startling. It brings extra realism to what is already seen.

Aerial photographs are shot in sequence at slightly different angles and overlap one another by 60 per cent. Any one feature will appear in two pictures. These are called a serial pair. When these two pictures are 'merged' with the aid of a stereoscope, the combined images accurately pinpoint features and give an exaggerated 3-D effect. The scope imitates what the human eyes and brain do naturally. Each eye senses a differently angled image. The brain adds a sense of distance when the two signals are interpreted.

It is possible, with some practice, to use the eye muscles to imitate a 3-D viewer. The idea is to focus the left eye on the left hand image and the right eye on the right hand image. The focal point on each picture should be about the same distance apart as your eyes.

Availability. Aerial photographs cover the whole of Australia and they are available to the public from the Lands Departments and their country offices and Government mapping agencies.

The main coverage is in black and white with much of the coastal fringe available in colour. Photographic coverage is renewed every 5-7 years. Scales vary according to land use, for example, the section from the coast to the Great Dividing Range in NSW is photographed at 1:25,000, giving a ground spread of about 5.5 km on a contact print about the size of this Earth Garden page. West of the Great Dividing Range, the scale is much smaller — about 1:60,000, giving a ground spread of 15 km.

Cost. These prints are $5.70 for black and white and $25.20 for the first colour print ($11.10 for subsequent prints). Enlargements can be made from a minimum area on the print of 3 cm x 3 cm and blown up to as much as 1 metre x 1 metre.

Car-less in the country

By Anne Crawford

Having lived close to public transport all my life and never having owned a car, nor found one necessary, it seemed natural that I would choose my place in the country with a view to being able to combine my bike with the use of public transport.

It is now marching on to seven years since I took the plunge from city to country living and in spite of frequent urging by my friends to do so, I have still not bought a motor vehicle.

Judging by February's RACV figures on the cost of running a small car — $57.00 per week plus petrol — I am even more pleased that I have refrained. Admittedly I am a solo 'back-to-the-earther' and these figures can more often than not be divided by two and more when children occupy the back seats. However, with the spiralling costs of owning a car, its harmful effects on us and our environment and its ability to make us forget we have legs, car ownership simply can't be justified if there is only one person behind the wheel.

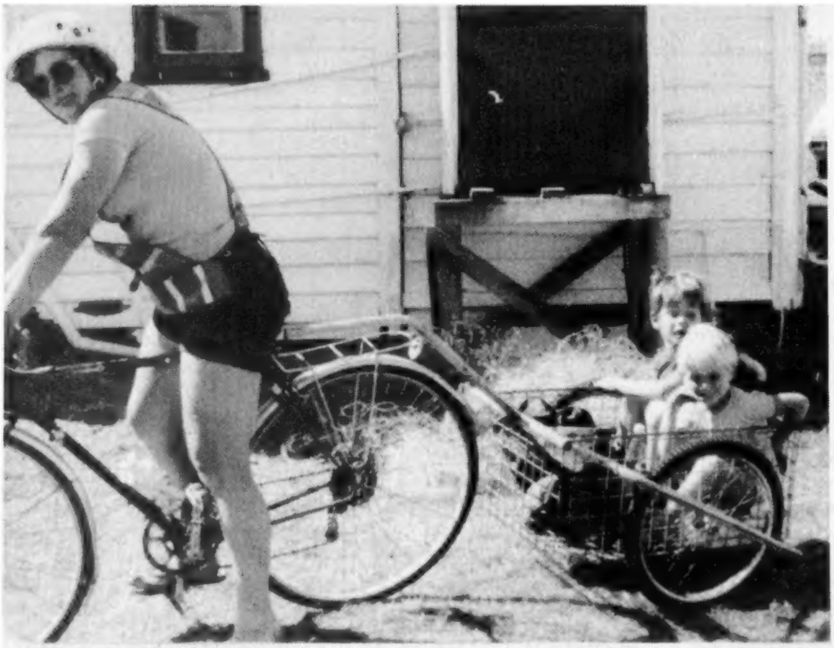
As all cycle tourists would know, the joy of being in tune with your surroundings and the tremendous satisfaction of reaching your destination under your own steam far outweigh any time-saving factors that occur when driving a car.

Obviously if you live 30 or more miles from the nearest town, this would be very hard to do and you would have to provide your every basic need. Knowing this and not being able to justify owning a car (in spite of having a current car licence), I bought land close to a provincial town, Warrnambool, which is 10½ miles (16 km) from my place.

The town is known as 'windy Warrnambool' and with increased productivity from my organic vegetable garden, my trips into town to stock up are now weekly, so I often choose the day to cycle in according to the wind. At times when the headwind is just too much, I hitch, or catch the workers' bus and hitch home. People often stop to ask, "Where's the bike?", or remark, "It's a bit blowy for the bike today!".

It's been known as I struggle along, loaded to the hilt, for the bus driver to stop and say, "For goodness sake, get in", as my progress was hardly more than a snail's pace. Bikes are flexible and can be put in the aisles of buses, in trains, utilities and car boots. In case it seems that I do more hitching than cycling, I clocked up 2,160 km last year just in trips around the area, most of which were done with a bicycle trailer behind.

If you are considering trading in your car for a set of bicycles for the family, don't be taken in by the super lightweight racing bikes. First talk to people who cycle tour or, better still, join a cycling touring club. To be fully set up



Anne, on 'Animal', takes two of her nephew's for a ride in the bike trailer.

with helmet, panniers front and back, a good touring bike and trailer, requires an outlay of about $700.00, though this outfit will outlast any car.

I am still using the same bike, which I call 'Animal', which I bought on my return from overseas in 1973. Alas, cycle touring had not really hit Australia then, and if anything it is a little on the heavy side, though considering the weights I carry this is probably a blessing. I do have 10 gears, but a wide five-range geared bike would be sufficient. As I'm not mechanically minded I believe the less gadgets I have, the less there is to go wrong (another good reason for being carless).

I bought Karrimor panniers for the front and back of the bike and proceeded to jam them full of the week's groceries. At the same time I realised that the road (Highway No 1) was full of goodies waiting to be recycled for ready cash. There were aluminium cans, returnable bottles, beer and stubby bottles by the dozen, tools, potato sacks, spilt hay, coins and wood for the stove and open fire.

When bags of wheat were needed, I would combine an evening out with the use of a taxi home, as there isn't any public transport at night, and really utilise the taxi by purchasing all major bulk items. If building timber was too big to take home this way, shops charge a nominal amount for delivery. However, all this changed when I attended a Self-Sufficiency Field Day in Melbourne in 1979 and saw and tried a bicycle trailer that was in the development stage. I promptly ordered one from Going Solar (Victoria Street, North Melbourne) and took delivery of it in March the following year.

Although the bicycle trailer is heavy and slows you down (you can go like the wind without it), it has made me more independent. It has doubled up as a wheelbarrow, has carted seaweed from the beach, groceries and plants and even taken my young Kelpie dog into Warrnambool to attend Obedience School, returning by the tip for goodies. The slower pace of the bike with trailer allows me to keep the stretch of highway free from unsightly throwaways which continually litter the roadside. Of course, I never have any parking problems.

Every month, with my card table and home-made blackboard made to fit the trailer, I take my homegrown and home-made produce to sell at the Community Market held at the Civic Green in Warrnambool. It has been suggested that I use the bike trailer to give children rides and I know this has been done — another means of making cash.

If you are cycling on major roads it is wise to take some safety precautions. I feel it is best to make yourself as visible as possible to traffic, so light-coloured clothing, a striped vest and a helmet are good ideas. I have found a handlebar mirror extremely useful as it enables me to pull over at the approach of semis and milk tankers, thus reducing the draught suction. Never fight with a car, they will always win.

Cycling at night is a problem along the highway and I avoid it at all costs, so I am dependent to some extent on car owners. But my very first WWOOFFER (Willing Workers On Organic Farms) arrived on a bike by night. He had no trouble cycling the 16 km of unfamiliar road, following the white line, but directions not being clear, went past the road. A neighbour being asked if he knew 'Patch O' Blue', the name of my property, did not. In desperation, for it was well past midnight, he asked, "Do you know the lass that cycles?". "Oh yes, come on, I'll take you down." Bike in the back of the ute, of course.

So by cycling one becomes known. I am sure that many people have stopped to give me a lift because they have seen me on the bike. I have stopped too and made friends with people who are sketching, other cyclists who pass me, and picnickers.

Cycling keeps me fit without trying. I know that I am helping to conserve this planet's dwindling resources, while in the extra time it takes me to get from A to B, I know that I have slowed down and become more attuned to my surroundings. What I 'waste' in time, I save in money. What I recycle more than pays for tyres and parts and a good bike should last a lifetime — it is my friend.

Before you choose your land in the country, bear in mind that your car may not be necessary after all. Cycling is not just a young person's art either. I am in my mid-forties and certainly hope to be cycling still when I'm 80.

Passing my way by bike? Well, feel free to wheel in!

Birds in the orchard

Freddie the Falcon flies on despite a broken wing.

by Chris Martin, Coonabarabran, NSW

Since establishing our 100 tree orchard in 1978 we have had some problems with birds stealing more than their fair share of the crop. Over these past years we have tried a number of methods to prevent this.

First there were fish nets. These were relatively expensive but served to do the job. The main problem was that Some parrots became entangled in the mesh and as we did not live here at the time they unfortunately died.

We then tried 'Scare Away'. This is a filmy spider web of fine netting that is spread over the trees. It is left on and as it is not resistant to ultra violet light it gradually rots away. As our site is fairly exposed, wind was a problem as the movement of the branches tore holes in the netting and let the birds in. This method was also expensive as the netting cannot be recycled.

Finally, we used rolls of commercial plastic netting available from Sarlon. This had to be cut to size for each tree and of course more netting had to be purchased as the trees grew. Covering very large trees was not practical due both to cost and access considerations.

While this netting worked fairly well there was still some damage to fruit on the outer edges of the trees and some clever birds worked out that the weakest point was the tie-up point around the trunk and took action accordingly. The netting was also hard to remove, it damaged buds and bent branches so that many grew horizontally, which made pruning difficult.

Feedback on the Wonder Bird Scarer (EG 45)

Enter Freddie the Falcon!

We first erected (if that is the word) the model of the predator 'big bird' in November 1984 after seeing an advertisment for it in a rural newspaper.

We had a bumper flowering year for our local eucalypts which encouraged droves of parrots into the area. Our peaches, usually a prime target, were left entirely alone. Now that we are in a mini-drought (March 1985) and there is little food available for the bird population, we are experiencing some problems with the immediate permanent population attacking apples and pears.

While we've had very good results with the bird model, which we call Freddie the Falcon, compared to other methods there are a few points worth mentioning that were not discussed in the article in Earth Garden 45.

Height: To be effective the silhouette has to be flown at least 10 metres above the ground. The idea is that the birds have to fly underneath the hawk or falcon, which is against their natural instincts. This means that you either have to have high trees adjacent to the site (we were lucky here) or fix very tall poles in place.

Moving: The falcon has to be moved at least every three days or visiting birds will be accustomed to its presence. This should not be a problem using the recommended flying method.

Effectiveness: This method has been effective in our orchard, except where birds have to make a choice between becoming a victim of the predator or starving to death and conclude that there is safety in numbers.

We also believe the home population (about six parrots) have twigged the illusion. As you can see, Freddie is now sporting a broken wing and we wonder if the local brown falcon has done a hatchet job of the 'intruder'. Currawongs take absolutely no notice of him whatsoever, at least since the food supply diminished.

Conclusion: Providing the bird scarer works for others as well as it has performed for us, it represents excellent value for very little effort. Any offers for $300 worth of used plastic netting? We doubt there will be any with the cost of the falcon at $17.00 odd.

VEGIE PATCH REVIVAL

by Rose-Marie and John Loro

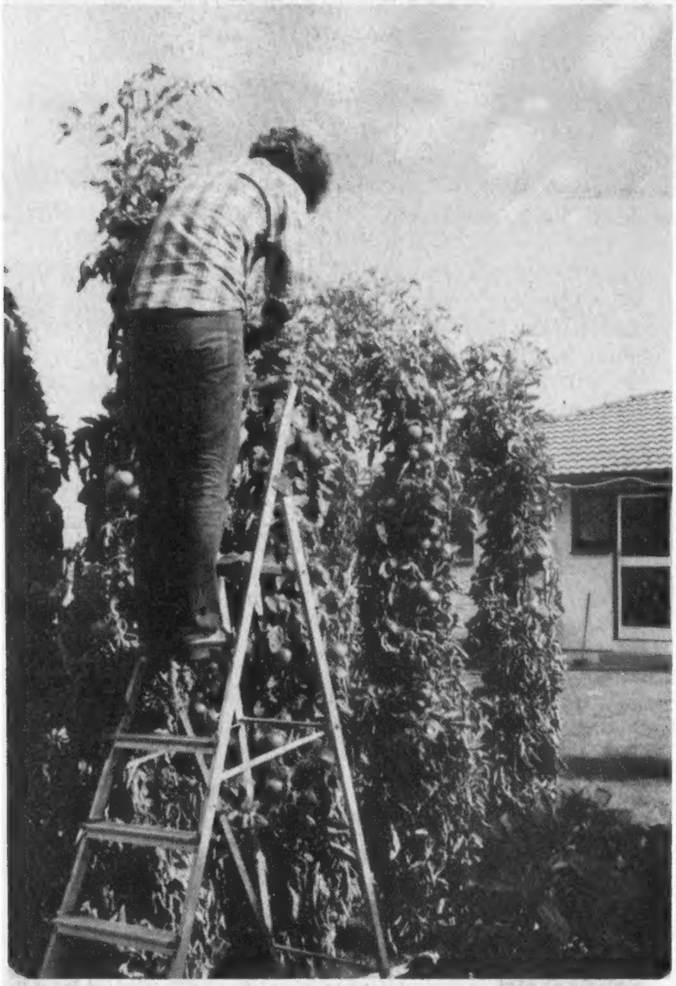
If you are living on a pension or unemployment benefits the bills keep coming just the same. Making ends meet is difficult but *not* impossible.

We soon realised that feeling sorry for ourselves is the most useless of all occupations. We must *help* ourselves. We decided to make a new beginning, searching for a way to help balance the budget and to make ourselves more self reliant.

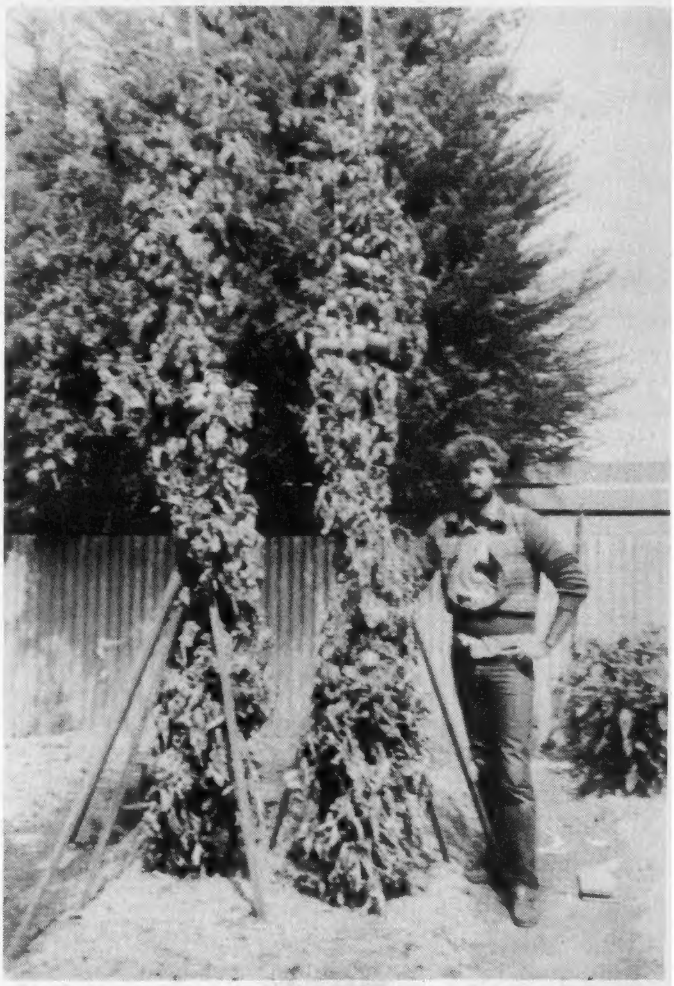
Twenty years ago my parents battled to make ends meet. They had very little money and seven children, but we never went hungry. My father turned our backyard into a harvest of food. My mother planned meals around the seasonal specials and whatever Dad had in the garden. Seeds for planting came from last season's harvest. They would be washed, dried and then stored in jars.

We decided to revive the vegetable patch idea to suit our need for an alternative food supply. We would cut down on meat dishes and eat more vegetables and fruit.

We could not move, but we could improve. We sat down with pen and paper and planned some changes in our backyard area. One third of it became fresh food garden. We also put in five fruit trees, a plumcot, peacherine, persimmon, mandarin/orange and a 'three-way' which is a



Tomatoes 1. John has climbed up the ladder to try to stop the plants growing higher by bending and tieing the tops towards one another. In the end he had to untie them and add extra height to the stakes and let them go (they did!). Mulching helped the plants to survive the summer heat, which affected the leaves of the tomatoes but not the fruit.

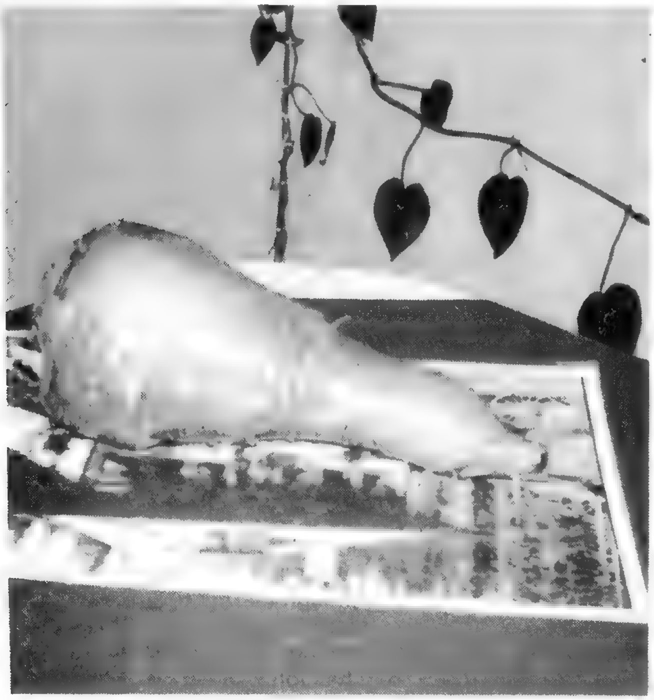


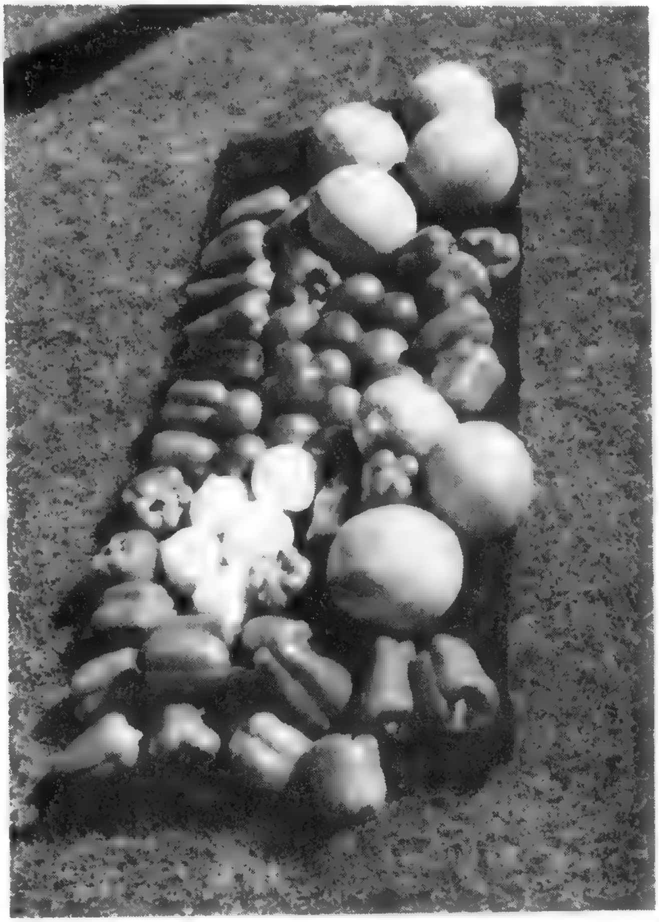
Tomatoes 2. The two remaining tomatoes after a big storm at the end of March. These two plants continued to grow to just under 14 ft high, even though the middle sections died back. We had quite a few more feeds from them. Composting and mulching cut watering down to once a week through the summer months. John is just under 6 ft tall.

Above. Part of the vegetable patch, showing carrots growing at left front, brussels sprouts behind them and trellised telephone and sugar snap peas at right.

Below. Super carrot — grown for juicing and not the least bit woody-centred, this giant was 37 cm long with an 18 cm circumference at the tip and just over 60 cm round at the head!

Right. A bountiful harvest early in 1984 included tomatoes, onions, capsicums and two kinds of melons.





tree which produces apricots, plums and peaches. Two Passionfruit were planted along the fence.

Our vegie patch area is 8 metres x 13 metres, divided up into metre wide rows with walkways in between. We worked out a system to suit our capabilities, a gardening method which involves minimal digging, yet gives great results. Well rotted compost is used regularly in large amounts to condition the soil and to prepare beds for planting. Our compost heap is made up of layers of lawn clippings, dead leaves, organic kitchen refuse, horse manure and any other organic materials we can lay our hands on.

Mulching is vital to our garden, as by preventing loss of soil moisture during the hot months it drastically reduces the need for watering. We use hay, straw or lawn clippings left to wilt for few days. Hay and straw used to mulch pumpkin or melon patches keeps the ripening crop from lying on watered soil and so prevents rot spots. Weeding is not necessary because the mulch keeps the weeds away.

We now lead a simple, productive, satisfying and enriching life. Since we began three years ago we have seasonal rewarding harvests that add up to substantial money savings and we have also found a way to cut down on eating chemically adulterated and over-processed foods.

I keep a record of the garden noting crop rotations, soil conditions and watering consumption, including any excess as this is compared with savings of harvest value for the same period, and compost and mulching details. We grow everything organically so there are no fertiliser costs.

We are at present saving for a preserving kit, a great asset to the home gardener. We invested in a *Womens Weekly* recipe box, two favourite segments being *Different ways with vegetables* and *Jams, pickles, chutneys and relishes.* These show how homegrown vegetables and fruit can be made up into nutritional, colourful, appealing, satisfying, economical and easily prepared meals.

We began just by growing everyday needs such as potatoes, carrots, peas, beans, spinach, celery, onion, garlic, corn, cauliflower, cabbage, broccoli, brussels sprouts, capsicum, tomatoes, and herbs. Now we also experiment with hybrids and unusual varieties of vegetables.

Our good results come from little work (by necessity), loads of composting, horse manure, watering and mulching. We enjoy our food garden as it gives us a feeling of self reliance, usefulness, self worth, achievement and pride. There is no better feeling than walking into your own backyard and picking fresh food.

You can't live on grass!

Anyone fortunate enough to have a backyard, yet unfortunately unemployed, could turn a part of their backyard lawn or any other area into food for the family in a short space of time and with little work. It cuts down considerably on food bills. Excess crops can be bartered for other needs or simply blanched frozen for later use. There is no extra watering cost as mulching cuts down on the amount of water needed, which would mostly go on lawns anyway — and you can't live on grass!

When we couldn't afford to buy, we found an alternative food supply. Perhaps other people can join us in the vegetable patch revival? They will be able to help themselves to a healthier lifestyle finding, as we did, that there we will be some money for other essentials and gaining a better outlook on life. We enjoy the continuing challenge.

GATE SECURITY

To improve the chance that your locked gate stays that way, here are a few suggestions.

The chain should have welded steel links at least 8 mm thick. Make it just long enough to go around the gate post and gate side bar (more economical and harder to interfere with). It is easier to lock and unlock if you attach the chain to the gate post with three or four coach screws, leaving the ends hanging in easy reach.

Next and most importantly the chain should be positioned *below* the gate post brace. This prevents it being slipped over the post if the top wire in the fence is cut or removed. If you have a strong reason for putting it above the brace, it is essential to attach it to the post with coach screws and to securely attach the top wire with staples or with heavy tie wire to a hole through the post. The padlock should be of similar dimension to the chain links.

It isn't a good idea to leave the key under a nearby rock. This may be handy, but over time you will make the position of the key obvious by wearing a track to the rock.

If you must leave the key, say for people working there in your absence, you could build a narrow footgate or stile and keep the key near the track to it. If you put the key beside the road you will probably avoid detection but it will be buried the next time the Council grades the road.

All that having been said, don't forget that nothing will stop a really determined person. Let's face it, most gates are in lengths of fence which permit access to anybody with a good pair of pliers.

NO WORRIES WITH THIS ONE, BILL!

ENERGY UPDATES AND ACCESS

Solar electric, wind and water power

In Earth Garden 45 we mentioned that we were finding it difficult to locate sources of solar electric tracking systems and water turbines in Australia. Those we've managed to track down are included in this section of energy information updates and access.

Solar trackers

Solar tracking devices which can point the flat surface 'face' of solar cell panels or modules directly at the sun from sunrise to sunset can double the efficiency of a solar electric system (see **EG44**) or devices like solar electric pumps (**EG45**) under good conditions.

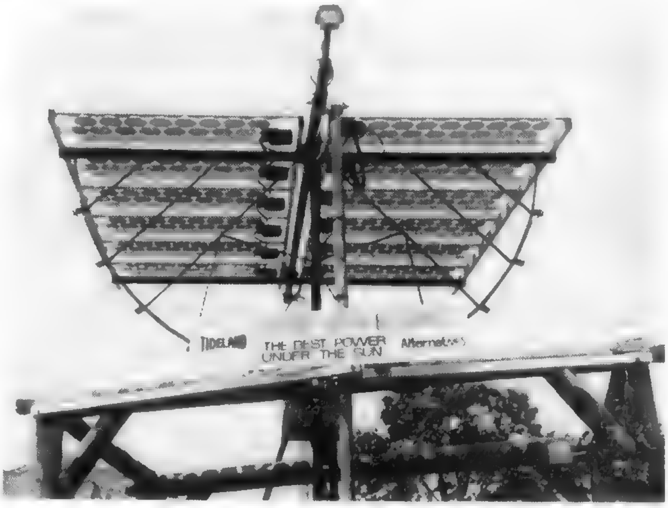
Output from a fixed solar panel peaks at noon and is at its lowest early in the morning and late in the afternoon, while panels moved by a solar tracker give a smoother, more evenly spread, flow of power throughout the day.

An array of four solar panels moving from east to west with a solar tracker will generate almost as much power as a fixed array of eight solar panels facing north, even taking into account the small amount of power needed to operate the tracker.

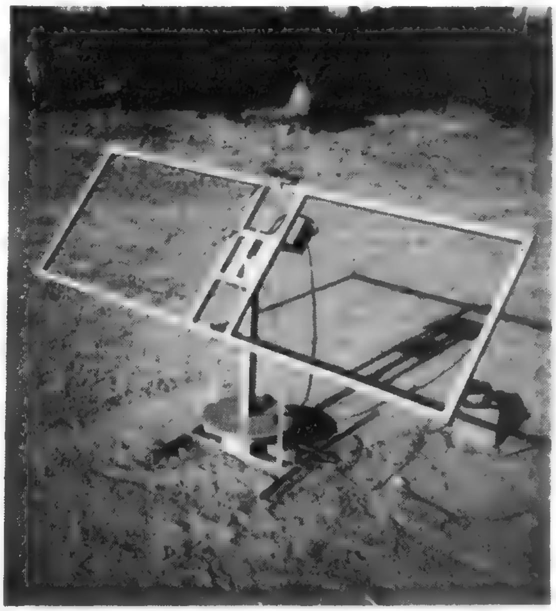
KIRBY SOLAR TRACKER

Invented by Rex Kirby, co-developed by Ron Kirby and using mechanical parts made by Barry Kirby, this Australian made solar tracker will operate an array of 2-6 solar panels mounted on the frame shown in the photo. The motor which swivels the array operates only a few seconds at a time, drawing 12 watt hours (Wh) of 12V DC power daily, directly from the solar cells.

About each hour the tracker 'tunes in' to the sun's movement and follows it up, slightly overshooting, which allows the sun to be on axis for the maximum possible hours of the day. It senses the sun's direction electronically and follows it through the day, shutting off at sunset and rotating back to the east to start the new day at dawn.



This array of 12 **Tideland** (now BP Solar Australia) solar panels, driven by an experimental solar tracker mechanism, now provides electricity for the Solar Powerhouse at Toowong in Brisbane (see **No mains house** in **Earth Garden 45**). The tracker is being developed by Adrian Hogg of Alter*natives*, 37 Bangalla Street, Toowong, Qld 4066, who can supply further information.



Left: This mudbrick house near Bunninyong, Victoria, is fitted with a solar electric system powered by four solar panels mounted on a Kirby solar tracker on the rooftop. At right: Kirby solar tracker, showing frame, stand and pivot.

A small mudbrick house at Bunninyong, Victoria, draws all its power requirements from four Solarex X100GT solar panels mounted on a Kirby solar tracker on its rooftop.

Power is stored in 12 x 2V 240 amp hour batteries to run 10 x 40W flourescent lights and a small TV set on 12V. A Kirby 1500W inverter supplies 240V AC power for washing machine, vacuum cleaner and hi-fi system. Refrigeration is LP gas while stove, heating and hot water is wood fired. No backup generator is used.

Kirby Solar Tracker, about $690.00 from: R. & R. Kirby, RMBW 610, Illabarook, via Ballarat, Victoria 3351.

ZOMEWORKS TRACK RACK

An updated version of Steve Baer's 'passive' sun tracker device has just come onto the market in the United States. It is activated by freon gas and has no motor and therefore draws no extra power to operate.

☐**Zomeworks Track Rack,** about $US425 from: Zomeworks Corporation, PO Box 25805, Alburquerque, New Mexico 87125, USA. Not available in Australia. Send international reply paid coupon or money order for $US1.00 for information.

Solar electric sources

Tideland Energy Pty Ltd has been taken over by British Petroleum (BP) and will be renamed **BP Solar Australia Pty Ltd.**

The company continues to manufacture solar modules in Australia at its factory at Brookvale (Sydney) and has just released its new **GL series** of glass laminated solar cell modules in which solar cells are encapsulated in a laminate of ethylene vinyl acetate, covered with tempered glass and mounted on a black or clear anodised frame.

☐ **GL3641/12,** rated at 37.5 peak watts, retails at $363.

☐ **GL3241/12,** rated at 33 peak watts, retails at $344.

From: **BP Solar Australia Pty Ltd,** PO Box 519, Brookvale Road, NSW 2100 and agents.

Suppliers of solar cell modules and equipment not mentioned in our list in Earth Garden 44 include:

Powlec Pty Ltd, 9 Mersey Street, Box Hill (Melbourne), Victoria 3129.

Solar panels, inverters, batteries, battery chargers, pumps, switches, timers, cables, DC lights.

R. & R. Kirby, RMBW 610, Illabarook, via Ballarat, Victoria 3351.

Solar panels, inverters, batteries, battery chargers, solar trackers, pumps, DC fluorescent lights and other appliances.

Bob McKnight (Trading) Pty Ltd, PO Box 379, Hamilton Central (Brisbane), Qld 4007; 5 Barron Street, West End (Townsville), Qld 4810.

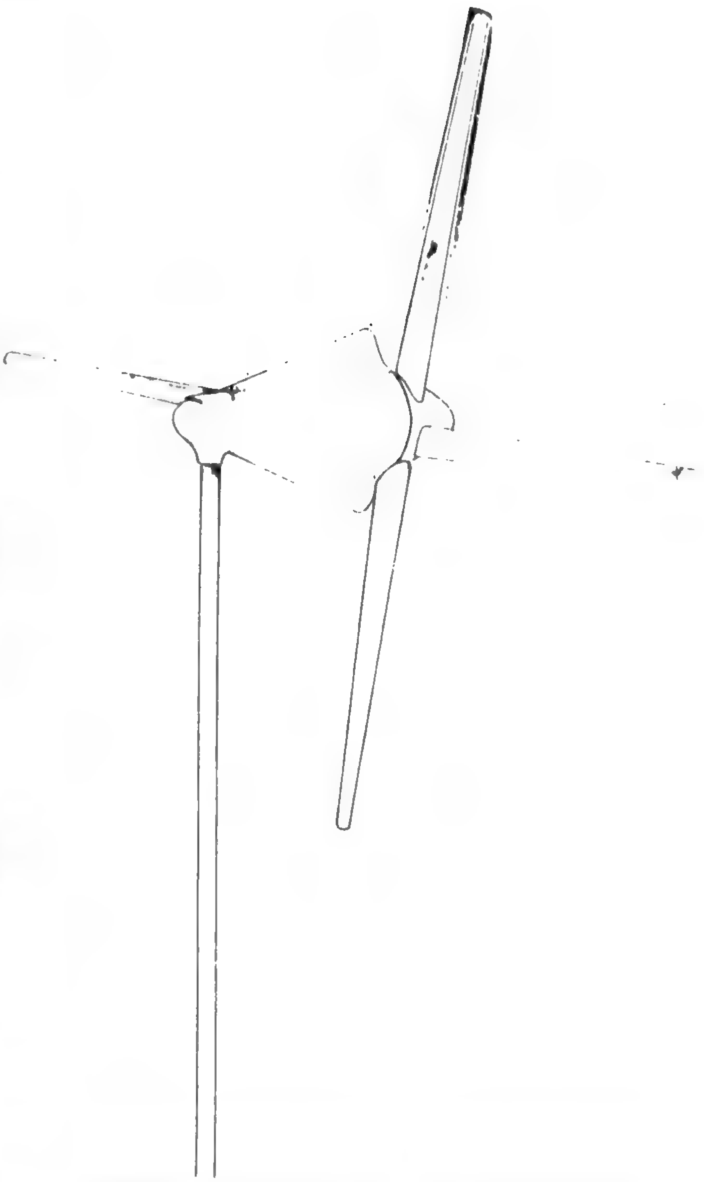
Solar panels, solar electric pumps, low voltage DC refrigerators.

Suntron Energy Company Pty Ltd, 861 Doncaster Road, Doncaster East (Melbourne), Victoria 3109; 7/48 Buckingham Drive, Waneroo (Perth) WA 6065.

Solar panels, including Solarex, Tideland (BP Solar Australia), Sharp, AEG-Telefunken and Kyocera, solar trackers, solar water pumping, inverters, battery chargers, electric fencing.

Total Solar Energy Systems (P. R. Webb Electronics), PO Box 84, Caloundra, Qld, 4551.

Solar panels, lighting kits, solar electric systems, solar tracker, inverters, solar water pumping, solar electric fences, batteries and appliances.



Windpower Australia

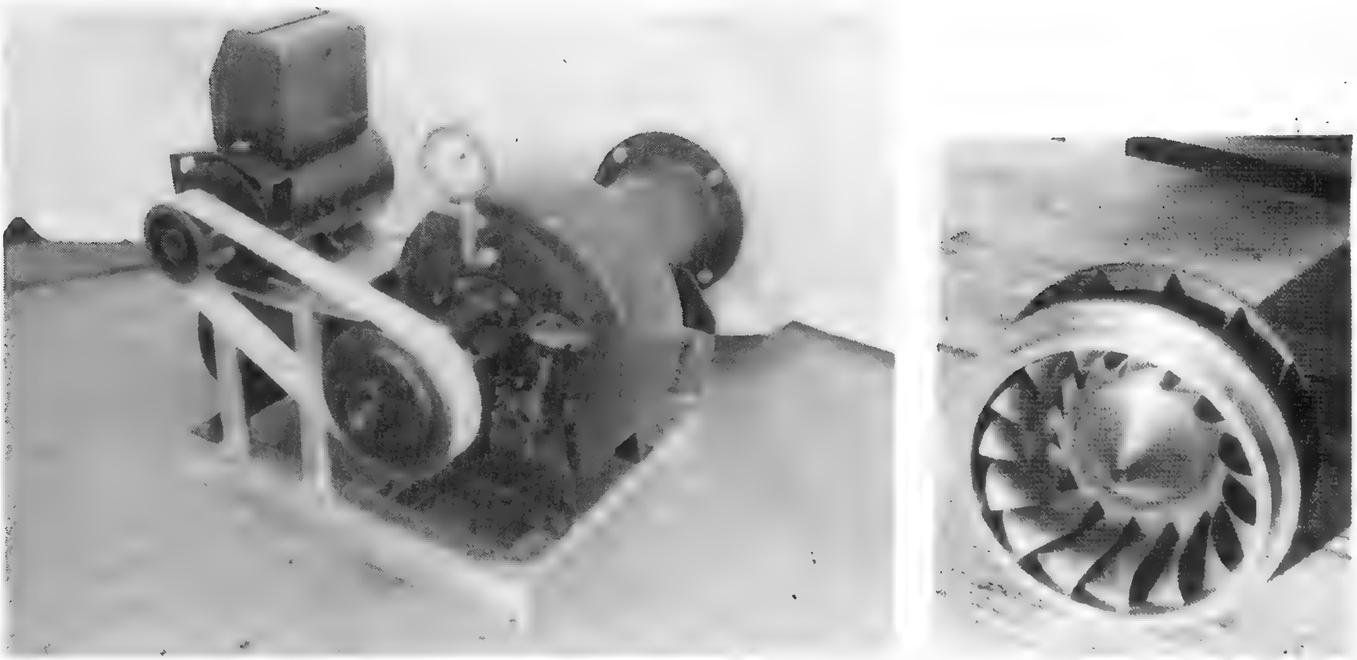
Windpower Australia is a new supplier of water pumping windmills, wind generators, solar electric/wind hybrid energy systems, solar electric pumps and water bore drilling rigs.

The company is an agent for **Wind Technology** wind generators, now being manufactured in Victoria. These feature a four bladed 3m diameter rotor and three phase brushless multipole generators with rated outputs ranging from 1 kW to 5 kW (Model nos **W-1, W-2** and **W-5)** in 12V, 24V and 24V DC.

Cut in is at 13km/h wind speed with rated power produced at 28 km/h. Maximum operating speed is 90 km/h winds. The generators can be mounted on a tubular steel pipe tower and include aerodynamic airbrakes for regulating speed.

Windpower Australia also handles water pumping windmills, including Bryan Bros & Borch of Colac, Victoria, Bowjob, Hayes Wonder Windmill from New Zealand and also the British-made LV Motors Ltd (LVM) **Aerogen** wind generators.

☐ **Windpower Australia,** PO Box 3, Austral, NSW 2171.



Francis turbine, used in low head sites, and its runner wheel fitted with water 'buckets'.

Electricity from water

Tamar Designs have been manufacturing water turbines and micro hydro plants with outputs from less than 1 kW to 20 kW since 1975 at Devoit in Tasmania. Many units have been exported to New Zealand, Papua New Guinea, Fiji, Malaysia and Sri Lanka.

The company can supply **Francis** turbines for low heads, up to 15 metres. These usually have steel cases, but for heads of 4 metres and less, these may be replaced by a concrete chamber which may be built on the site. **Turgo impulse wheels** are available for medium head water sites.

Tamar has developed an automatic start-on-demand electric generator powered by a water driven turbine which switches on as electricity is used.

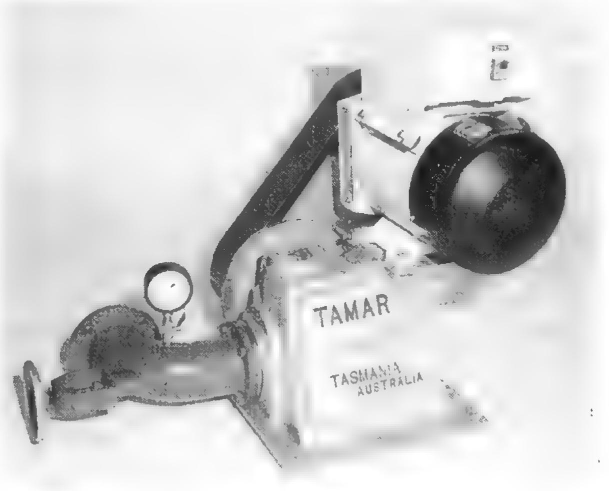
The firm builds custom made hydro electric plants to suit individual requirements, for falls of from two metres to over 200 metres. They can supply micro hydro sets with larger outputs, such as 500 kW, for villages and communities. They are agents for **Gilkes** waterwheels and turbines made in the United Kingdom (see **EG25**).

Pelton wheels. These two Pelton wheel units from Tamar Designs do much the same job as the Austrian-made turbines mentioned in **Earth Garden 45** but are cheaper because they are locally made (no import duty and lower freight costs).

1. 4 kW/240V or 110V AC unit at 50 cycles (Hz), complete with governor and alternators is priced at around $5,000. With demand start, $6,000.
2. 150W/24V or 12V DC unit for charging a battery bank is priced at around $1,500.

Pelton wheels, Turgo impulse wheels, Francis turbines.

☐ **Tamar Designs Pty Ltd**, Devoit, Tasmania 7251. Send SAE for leaflet or $8.00 for booklet on planning small hydro electric schemes.



Tamar Designs 'A' range Pelton turbine for the village of Nasoqo in Fiji.

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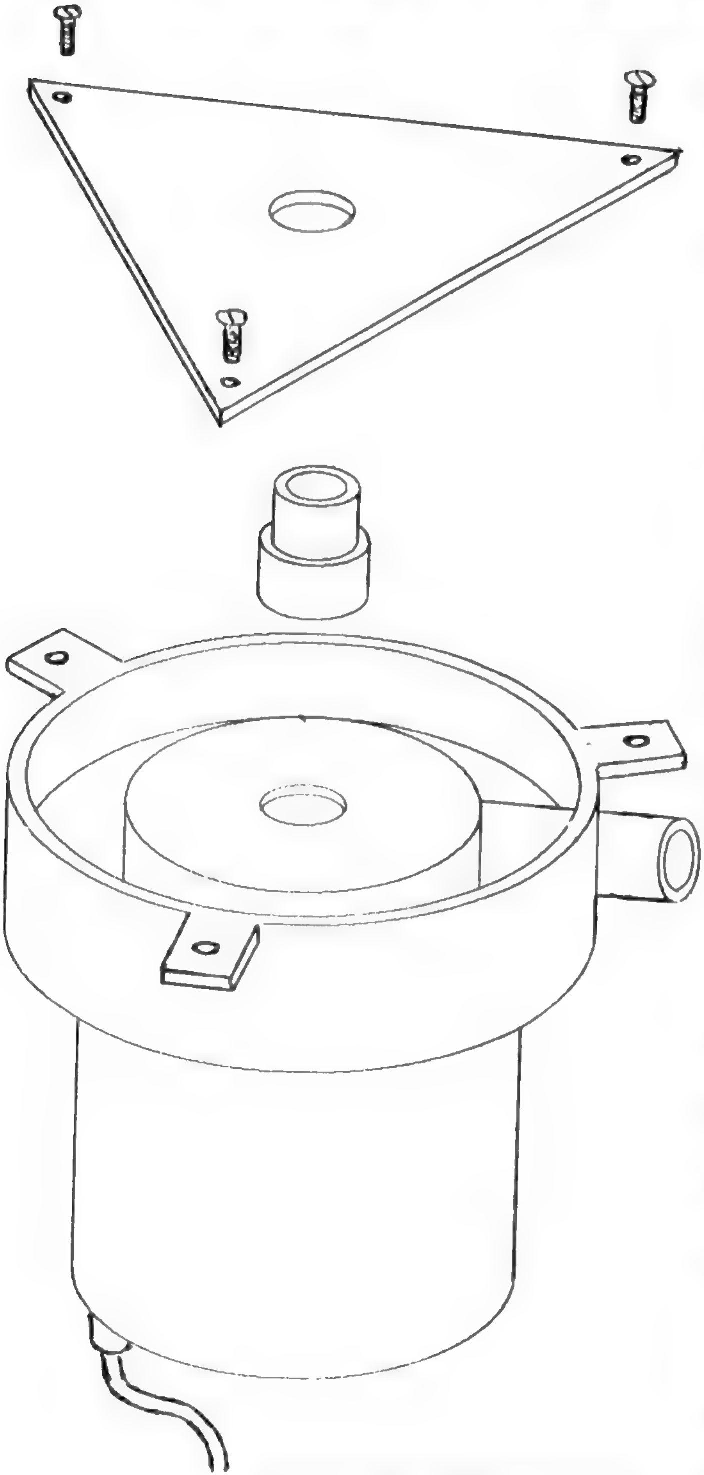
Let the postman bring your Earth Garden !

House water from a 12V bilge pump



Casing of the 12V bilge pump.

☐ **Bilge pumps are rugged pumps (sometimes submersible), used to drain water from the bottom of boats or to run garden fountains. Peter Pedals explains how to use a 12V bilge pump to provide a pressurised home water supply which may not even need a tap!**

By Peter van der Wyk

Have you ever lived in a house with a roof catchment tank not high enough for gravity feed to provide a good water pressure inside the house? In exactly that situation I found that I would use second-quality dam or creek water, even for cooking and drinking, in preference to the first-quality water because it was always a bother to have to go outside to fetch it.

This problem of a water tank below kitchen tap level is very common. If I had been able to pump the tank water inside easily I would have made good use of such a resource.

When I saw a fancy looking 12V pump designed as a household water pressure pump I was really shocked at the price of it. Then luckily I happened to come across a bilge pump for a third of the price and immediately realised its potential for people living in the bush. This pump has been working continuously and trouble free for four years now.

This bilge pump comes in the form of a vertical cylinder with a single intake hole in the bottom and a hose connection coming out the side. Sealed inside the top two-thirds of the pump is a 12V motor driving a centrifugal vertical axis pump mechanism in the bottom section. A set of wires comes out through the top.

What I've just described to you as top and bottom is only that way in the conventional method of using the pump. I have ended up using the pump on its side. This is so the inlet end of the pump is facing straight at the tap at the bottom of the tank. The outlet end of the pump faces straight up so that the hose connected to it comes up through the floor and into the kitchen.

On the bilge pump that I had, the seal around the impeller tended to leak. The casing around the impeller was held on to the main body of the pump by a few screws. I undid the screws, smeared some **Hydroseal** onto the surface where the contact was made and screwed it back on again.

If a water tap in the house is located higher than the top of the tank, you don't need a tap inside that can be turned off but simply an open-ended bent pipe or connector above your sink. Even if a full tank is slightly higher than your tap level, you can make do with a cheap plastic hose connection tap fitting because it doesn't normally have to cope with pressure (to state the obvious). If you do have a tap, it may be left turned on.

An electric toggle switch (like a 240V house light-switch) placed conveniently above your sink is used to turn the pressure on and off.

I found a cheap plastic hose connector with its wide end wide enough to fit over the inlet hole onto the plastic around it. This fitting, I anticipated, could be glued onto the opening with the right kind of plastic glue. There are three screw holes in the base of the pump around the inlet. By cutting a piece of thin timber to the right size to be screwed onto the base of the pump by these three screw holes, you can create a simple clamp to hold the fitting in place while the glue sets.

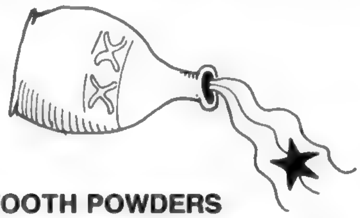
In fact, if a hole is drilled to coincide with the location of the inlet hole and large enough to fit over the narrow end of the hose connector (but not wide enough to fit over the wider end), there is no need to remove the clamp after the glue sets.

When the glue has set, connect the polypipe (or whatever you are using) to the inlet and outlet ends of your pump, to your kitchen sink and to the water tank. You may need a couple of metal hose clamps to fit the pipe securely to your pump.

Now all you need to do is to connect up the wires. The positive lead from your power source (battery or solar panel) connects to the electrical switch. A lead comes off the switch and goes to the positive connector of the pump. The negative connector of the pump then connects to the negative of your power source.

Remember that red usually denotes positive and blue or black is usually negative. In case of a short circuit, it is advisable to have a fuse of large enough amperage to cope with the surge current of the pump. I have used a 20 amp fuse to protect several circuits (not just the pump).

I now have a tap that delivers water when I turn on the electric switch. It works wonderfully well. The brand name of the pump I used was **King** (BP2). It cost me $13.50, pumps 100 litres per hour and consumes 3 amps when turned on.



TOOTH POWDERS

To Neil, Janice and friends, who asked for simple alternatives to commercial toothpaste in a letter to **Earth people write** in Earth Garden 45.

I have a book titled **Beeton's All About Everything,** dated 1888, which contains a few recipes for tooth powders. I hope you can make some sense of the Old English ingredients and measures.

(i) 1½ lb charcoal, ¼ lb Peruvian bark. Reduce these to the finest possible powder and mix them all together.

(ii) 1 oz alum, 1 oz myrrh, ½ oz camphor, ½ oz cream of tartar. Pound these ingredients as fine as possible and mix them well together.

(iii) ½ oz of charcoal, ½ oz orris root, 2 drachms of cuttlefish bone and 1 drachm of myrrh, reduced to the finest powder and well mixed.

(iv) Prepared chalk, 4 oz, powdered cinnamon, ¼ oz, a little myrrh and essence of violets may be added and the whole well mixed.

(v) Take a large piece of crumbed bread or the inside of a French roll, burn it to charcoal and reduce it to a very fine powder, first by bruising it in a mortar and after that by rolling it.

Hope these recipes will help, Peter W. Squires, Marysville, Victoria.

Herbal shampoo

By Ron Haines

$2.00 a bottle and up ... shampoo is expensive these days.

Why not make your own? You can, it's easy.

A pleasant herbal shampoo can be made by following these simple instructions. Your hair will benefit, so will your purse.

The main ingredient is a plant known as Soapwort (Saponaria officinalis). This herb has been used in washing processes for hundreds of years. It is very good for washing delicate silks. While the root of Soapwort is the soapiest part, it is best to use only the leaves and stems to preserve and prolong the life of the plant.

BASIC HERBAL SHAMPOO

A handful of dried soapwort stems and leaves
1 tablespoon of chamomile flowers
1 teaspoon of purified borax (from the chemist)
water

Split the ingredients into two pottery containers. Add 300 ml of boiling water to each. Cork tightly and leave overnight, shaking occasionally. Strain off the liquid and use as required.

A tablespoon of parsley and nettle can be added when preparing the basic mixture. This should solve any dandruff problems. If you like perfume, add a sprig of lavender after straining.

You will not get the copious lather of a detergent-based commercial shampoo, however its cleansing and tonic properties are excellent.

TONIC CONDITIONERS

Some of us like to finish off a hair wash with a tonic rinse or conditioner. If this is the case, try rinsing with an infusion of the following herbs:

Parsley, will clear away dandruff.

Rosemary, to perfume and darken the hair.

Chamomile, to brighten fair hair.

Fennel, nettles and lime flowers make a good general conditioner.

Prepare your infusion by placing three or four tablespoons of the fresh herb (bruised), or one teaspoon of the dried herb, into a pottery container. Pour on 300 ml of boiling water. Let it steep for at least 30 minutes, strain and it's ready for use. An infusion will keep in the refrigerator for a week.

URBAN HOMESTEADING

THE GALEAS GAIN A HOME

This March Victoria's Minister for Housing, Ian Cathie, presented Tony and Catherine Galea with a plaque showing their home, plus a cheque for $1,000 awarded by the Security Permanent Building Society. The award is in recognition of their "effort, perseverance and achievement in renovation of their house at 21 Exhibition Street, Footscray (Melbourne) through the Ministry of Housing Urban Homesteading Program."

The story really began in October, 1981 when the Galea family, who were renting a second floor Ministry of Housing unit in the Braybrook Walkup Estate, applied to join the Urban Homesteading Program and were accepted after two interviews.

Tony, Catherine and their daughters Melanie, 4½ years old and Tabbatha 2, moved into the three bedroom weatherboard house in Footscray early in June 1982.

Under the Urban Homesteading Program the Ministry buys the older houses in Melbourne, Geelong, Ballarat and Bendigo which are structurally sound but in need of renovation. The homesteaders then move in and become 'owner-renovators', undertaking to repair and rebuild the house over a period of two years using their own energy and skills. They are advanced money to pay for tradesmen and materials as specified. When the renovation is completed they buy the house on a no deposit loan arranged by the Ministry. The cash has been replaced by their own labour . . . it's called 'sweat equity'.

With a background in wood machining, Tony Galea was able to do most of the renovation work himself. Homesteaders can call on technical advice from experts at the Ministry and many people acquire useful skills as they go along.

With the loan of two large jacks the house was completely reblocked, despite many delays caused by winter rains. Major tasks included the installation of new roof spouting and down pipes, replastering and repainting, remodelling the kitchen and replacing windows. At one stage when plumbing was being done to relocate the toilet inside the house, the family was forced to use 'the facilities' of a Service Station nearby for three days (the joys of Homesteading!).

Having spent many days and used numerous sanding discs to prepare one side of the house for painting, Tony bought a second-hand kerosene blowlamp. He found that the remainder of the house was a breeze after that and that it had a much better finish.

Tony and Catherine's newly renovated cottage is a lot different than the rundown property with no heating and poor facilities, that it was 2½ years ago. In return for their hard work and a period of discomfort, the Urban Homesteading scheme has enabled them to buy their own home with no deposit and a mortgage with repayments they can make on their regular income. The $1,000 should come in handy too!

Potential Urban Homesteaders must be over 18 years of age, live in Victoria and have a family income of not more than $350 weekly (with no children), $368 with one child, $384 with two children, etc. They must be able to make regular loan or mortgage repayments and their family assets should not exceed $15,000. They should have home handyperson skills, agree to completely rehabilitate the house within two years and to live in it for at least three years after that.

Of course there are more applicants than houses available, so participants are selected by interview. For further information or an application form, contact:

□**Urban Homesteading Program**, Special Purchase Branch, Ministry of Housing, GPO Box 1670N, Melbourne, Victoria 3001. Telephone: (03) 669 1479

TWENTY HOMES COMPLETED

About 20 houses have now been completed by owner builders taking part in the Self Build Program run by the Victorian Ministry of Housing.

Most homes have been built from mudbricks, made and laid by the self-builders, though there are also a few stone houses and one built in brick veneer.

Ian and Kerry Molloy of Longlea Forest, near Strathfieldsaye, Victoria, were the first in the scheme to complete their mudbrick home and receive a certificate of occupancy. They told their story in **The self built house** in Earth Garden 40.

Over 200 families are now in the scheme, set up in 1982 by the Ministry to encourage and aid people building their own homes. They include three families who were burnt out of their homes in the Avoca-Maryborough bushfires.

'Sweat equity' applies in the Self Build Program as it does in the Urban Homesteading Program. If you can build your own house, the hard physical labour involved replaces the normal cash deposit.

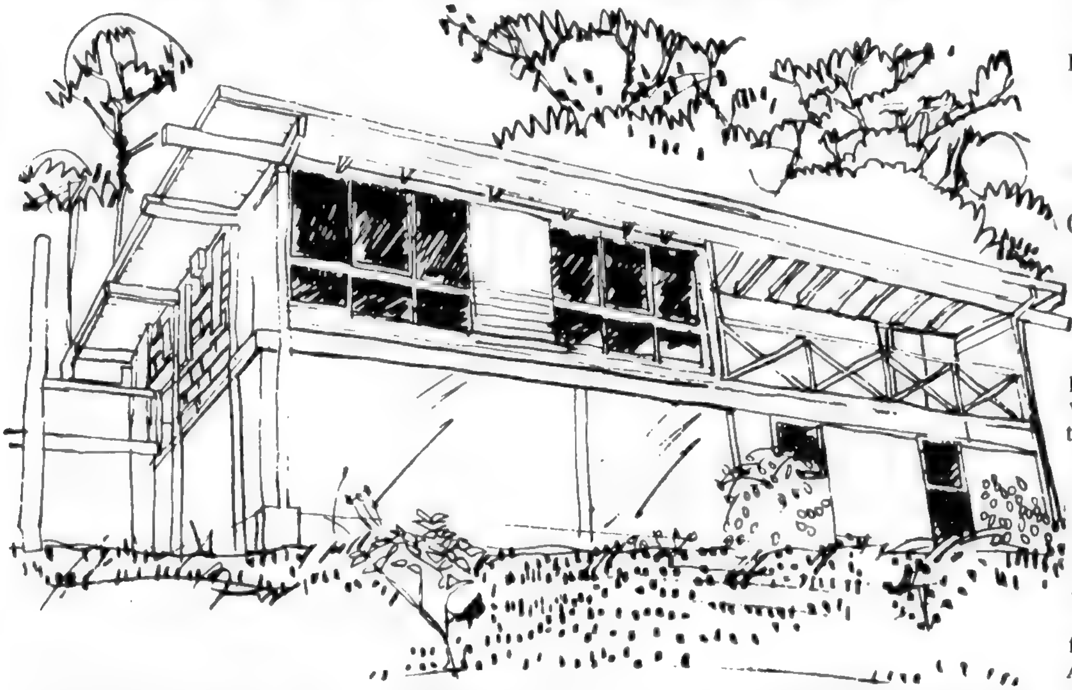
Self builders may already own their own land, or the Ministry will assist in purchasing it. Depending on their skills and self confidence, self builders may tackle making, laying and rendering mudbricks, staining and painting timber surfaces, erecting framing and roofing, pouring footings, installing doors, windows and fixtures. However, the Ministry will assist self builders to select professional designers and builders to do any work which is beyond their amateur skills. This may include pouring of concrete footings, erection of the structural frame and roof, plumbing and wiring.

The same general requirements apply to potential self builders as to urban homesteaders. The building should reach lock-up stage after 12 months and be completed within 18 months and self builders must agree to live in the house at least three years after completion. Funding by loans is available up to $24,000 for construction and $10,000 for land to approved applicants.

Security Permanent Building Society, which sponsored the two awards mentioned here, announced recently that it will make $1,000,000 available annually to complement funding of the Victorian Ministry's two innovative home schemes for low income families.

☐**Self Build program.** Contact the Ministry of Housing in Melbourne (address opposite) or Bendigo, phone (054) 42 1022, for further information and application forms. **Mudbrick display house**, Wungan Street, Macleod. Open for inspection by appointment. Phone (03) 435 2380.

SELF BUILD HOUSING

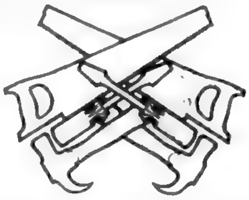


The decision on the most outstanding owner built home in the Self Build Program was a difficult one for the judging panel. In the end, John and Arlene Crozier of Belgrave Heights, Victoria, received the award, with a plaque, a cheque for $1000 from Security Permanent Building Society and windcheaters overprinted with a picture of their house (shown here).

John and Arlene Crozier were among the first families approved for the scheme in the Melbourne area in 1982. They had already begun to purchase their block of land, which was later refinanced by the Ministry of Housing.

As the building site was steep they decided to make a pole building. Luckily they were able to acquire enough cheap SEC power poles and other recycled building materials. The house had reached frame stage at the time of the Ash Wednesday bushfire. The frame survived the blaze, but many materials were lost.

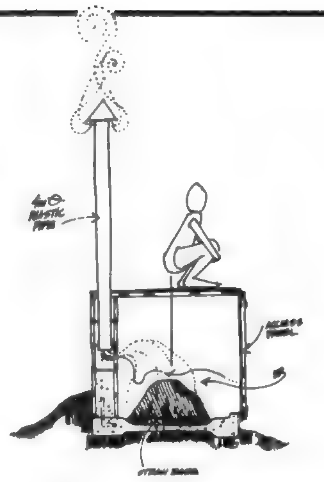
The Croziers built their home with little help from tradesmen, learning as they built by trial-and-error. The house took just over 18 months to complete for a total loan of $30,000.

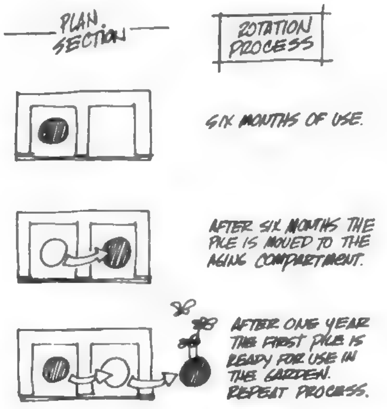


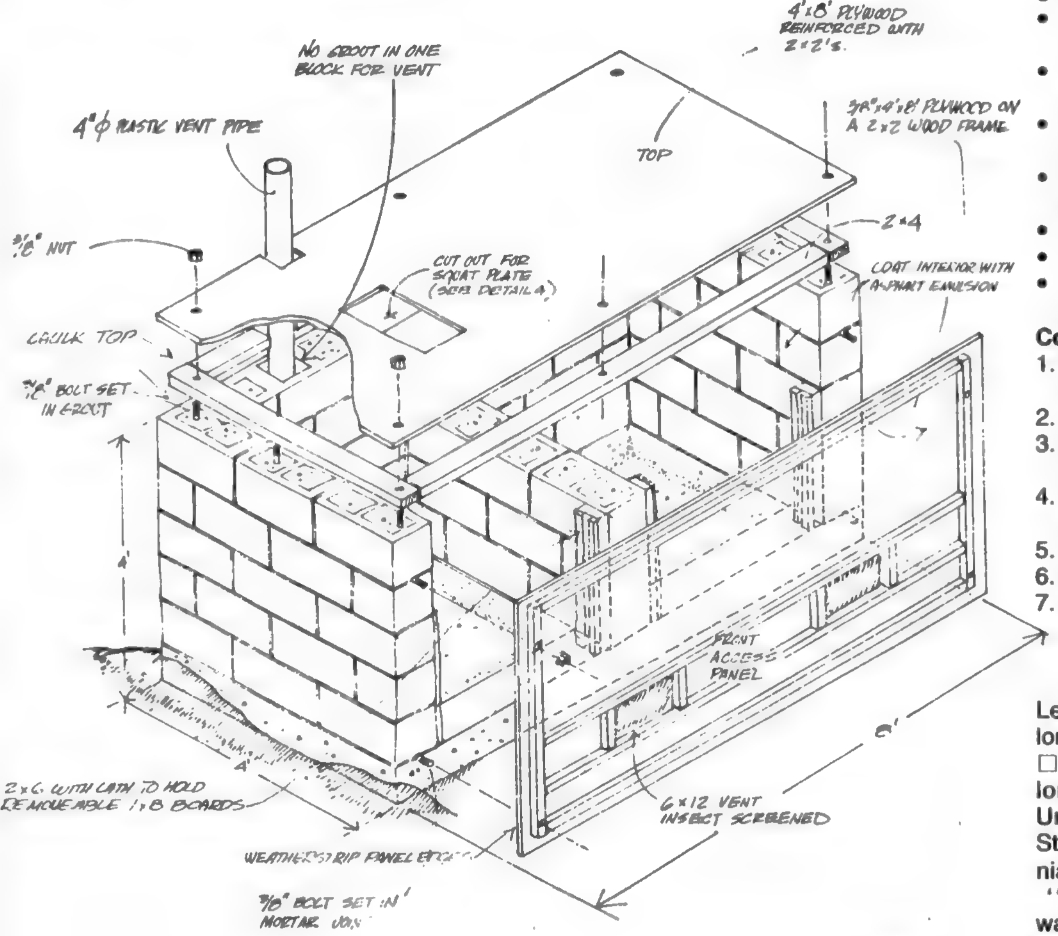
SEMINARS

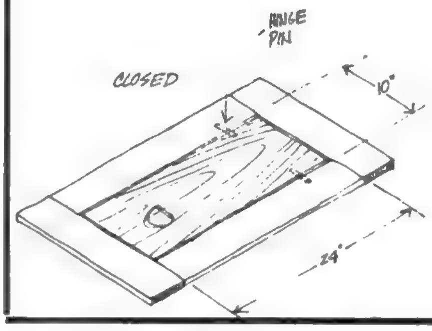
A seminar on **Self Build Housing** and **Urban Homesteading** is held on the first Friday of each month at 2.30 pm in the Conference Room on the 14th floor, Myer House, 250 Elizabeth Street, Melbourne (corner of Elizabeth and Lonsdale Streets). You can see a video and have your questions answered.

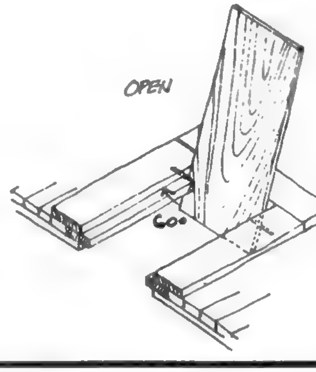
FARRALONES COMPOSTING PRIVY




PLAN SECTION
ROTATION PROCESS
SIX MONTHS OF USE.
AFTER SIX MONTHS THE PILE IS MOVED TO THE AGING COMPARTMENT.
AFTER ONE YEAR THE FIRST PILE IS READY FOR USE IN THE GARDEN. REPEAT PROCESS.


4'x8' PLYWOOD REINFORCED WITH 2x2's.
NO GROOT IN ONE BLOCK FOR VENT
4"ϕ PLASTIC VENT PIPE
TOP
3/8"x4'x8' PLYWOOD ON A 2x2 WOOD FRAME
2x4
3/8" NUT
CUT OUT FOR SQUAT PLATE (SEE DETAIL 4)
COAT INTERIOR WITH ASPHALT EMULSION
CAULK TOP
3/8" BOLT SET IN GROUT
4'
FRONT ACCESS PANEL
8'
4'
2x6 WITH LATH TO HOLD REMOVEABLE 1x8 BOARDS
6x12 VENT INSECT SCREENED
WEATHERSTRIP PANEL EDGES
3/8" BOLT SET IN MORTAR JOINT





Materials Needed

- 2/3 cubic yard concrete for slab and grout
- one sack mortar
- **concrete blocks**

40-8 in x 16 in stretchers
20-8 in x 16 in corners
8 half blocks

- 40 linear ft rebar ⅜ in, 4 ft lengths
- 1 sheet 4 ft x 8 ft x ⅝ in plywood
- 1 sheet 4 ft x 8 ft x ⅜ in plywood
- 5 off 2 x 4 x 8 ft redwood plates
- 6 off 2 x 2 x 8 ft runners
- 4 sq ft insect screening
- 12 ft x 4 in diameter plastic pipe for vent

Construction Sequence

1. Level site, layout, place vertical rebar
2. Pour slab
3. Lay blocks, cure 24 hours
4. Fabricate top, access panel
5. Place vent pipe
6. Make squat plate
7. Build enclosure

The Farralones Composting Privy

Leaflet, 17 pages, Farralones Institute, 1976
☐$US 4.00 from Farralones Institute, Integral Urban House, 1516 Fifth Street, Berkeley, California 94710, USA.

"Our composting toilet was based on the Farralones Composting Privy, but as we do not have concrete corner blocks in our area, we ended up using 65 stretcher blocks. This was the only change. Our information was based on a leaflet from the Nimbin Homebuilders' Association, PO Nimbin, NSW 2480. Send SAE to ask its price."

Chris Martin

The $300 super loo

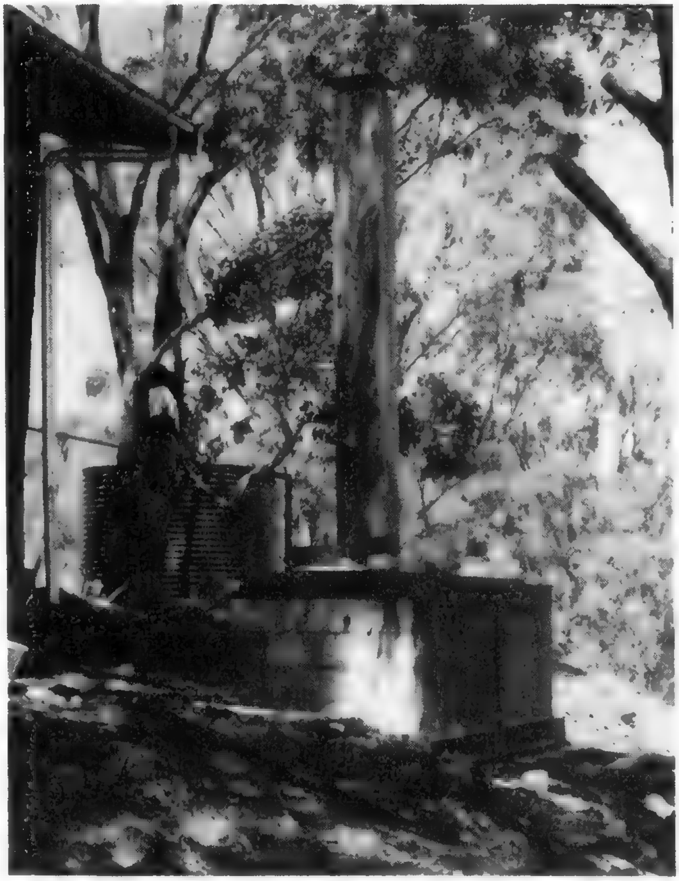
Composting toilets are a sanitary and fairly odourless alternative to septic tanks and pit toilets. They do not require water for flushing, use no energy, do not pollute groundwater and turn human wastes into valuable fertiliser. They may be built cheaply and can be quite attractive, as you will see in these articles on owner-built two holers.

By Chris Martin

After a year of digging holes in the open in all kinds of weather, including winter days cold enough to freeze the proverbial pawnbroker's sign, we decided we should hasten our plans for human waste disposal and provide a great deal more personal protection from the weather. The odd nocturnal visit with toilet paper and shovel may be interesting, but it gets a bit wearing after a week of continuous rain, and besides, the paper gets soggy!

Living as we do on a steep hillside in the catchment area for our local town's water supply, we were concerned that the approved disposal methods, namely septic tank and pit toilet, were fraught with problems. A pit toilet was almost impossible to dig as the basalt ground was guaranteed to blunt the tip of the best crowbar and lack of absorption meant there was a good chance of pathogens finding their way into the creek. The septic tank provided similar problems, but as the only possible absorption site was 200 metres from the house, figures of $2,000 plus flashed before our eyes.

We investigated the **Bio-Loo** and the Bio-Loo humus toilet, but knocked the first back on the basis of power consumption, which would be too much for our alternative energy system (see **Energy off the shelf** in *Earth Garden*



Above: This view of Chris Martin's owner-built composting toilet, based on the Farralones privy, shows the timber flue and concrete base.

At left: These two toilet seats are now enclosed as part of the mudbrick bathroom with its coloured bottle and stained glass windows.

44). The humus toilet, although it used no water, at around $2,000, was just as expensive as a septic tank.

One of our neighbours then told us about the **Farralones** composting toilet (page 20) but warned us that he had approached a NSW north coast council with the idea when he was thinking of settling in the area and met with a blunt refusal.

Another friend told us of a chance meeting with a settler near Dorrigo who was using a composting toilet and suggested that we contact him. We were quite worried that as we are meat eaters, the loo might smell, so we were happy to find someone who was using a composting toilet successfully. He said it was working well, even through cold winters, which was another of our worries as our climate can be quite severe.

He mentioned that there was only a slight earth smell, which we have since confirmed, and said he did not even have to turn the pile. He had met strong opposition from the local council, but after two years of taking samples, the health authorities had not been able to fault the system. Apparently, in NSW the onus is on the health authorities to prove that the waste disposal method is unhygienic and not the other way around.

Armed with this knowledge we approached our health/building inspector with the plans for our cottage extension, including the loo, and prepared to bolt for the door. To our surprise he was most receptive to the idea of a composting toilet as he had become quite worried about waste disposal in the many building subdivisions in the town catchment area. He had grown up with a pit toilet and was aware of the water wastage in a septic system. He must have been impressed with the information contained in our copy of the Farralones pamphlet, as he gave us provisional approval to build the toilet.

Construction. The unit consists of 2 × 1m^3 chambers side by side on a 150 mm concrete base. We used concrete blocks for the chamber walls as the loo was an integral structural part of the bathroom wall, but friends have also obtained permission to build with Bondrete-coated cement stabilised mudbricks.

The Farralones system uses the side under the hole for six months, then moves the partly-composted material to the second chamber for a further six months to complete the aerobic decomposition. We decided that it was easier to have a hole with a lid over each chamber and simply change holes every six months, which has the same effect and removes the necessity to shift piles. We chose to start the cycle in spring and autumn to give the pile a chance to warm up before our very cold winter.

To ensure a good start, 30 cm of dry straw needs to be placed over 10 cm of sawdust. This also tends to absorb excess urine.

Problems. We faced our loo to the north as we reasoned that the pile would be warmed for longer periods in winter and the prevailing wind is north east-north west. Breezes over the pile increase the aerobic activity. We have found one snag with this orientation though. Each time the toilet is used you simply throw a handful of sawdust down the hole. But with a northerly blowing, the unwary user can get a face full of sawdust blown back up the hole, as the wind finds the hole an easier breezeway than the 30 cm timber flue. We have consequently become quite adept at quickly flinging in the sawdust through a narrow opening of the lid!

Blowflies can be a problem and unless you can afford kiln-dried dressed timber, liberal use of caulking compound is required.

There are two banned types of users — anybody taking antibiotics or hormones and this means 'the pill'. Both harm the decomposition process.

The health inspector had a look at the finished article before the mudbrick bathroom walls were up and has agreed to our suggestion that when the first cycle is completed we should send some of the compost away for analysis.

Since the first heady days of actually having a loo to use and waving madly to passing cars which tooted as we happily perched on our hillside, we now have the classiest loo around. In fact, with its coloured bottle windows on one wall and round stained glass window opposite, it's the fanciest room in our house! It's our pride and joy, shown to all and definitely not shunned, though if people must stick their heads in to have a look, we make sure it is the so-far-empty side. At around $300 the loo is a cheap solution to our waste problems.

Compost from the loo will be used around our fruit trees, but we delight in telling uninitiated visitors (usually 'civilised' folks from the city) that the carrots or other root vegetables they have just eaten were grown in compost, courtesy of our 'super loo'!

Goodbye to the Flush Toilet

Edited by Carol Hupping Stoner

Rodale Press, Emmaus, Pennslvania, USA, 1977, 285 pages, paperback, illustrated.

☐ Distributed in Australia by ANZ Book Co., 23 Cross Street, Brookvale, NSW, 2100.

This book covers the case for waterless toilets with plans for building various composting toilets including the Farralones composting privy. It compares and evaluates various commercial waterless toilets such as the Clivus Multrum, Toa Throne, Ecolet and Bio Loo and also covers greywater disposal and methods of saving water.

An elegant two-holer

The principles of composting toilets are reviewed and a description is given of a simple homebuilt two-holer, with some comments on operating experience. An improved type of pit toilet is also described.

By Lindsay Corben

Our alternative toilet bible is **Goodbye to the Flush Toilet,** edited by Carol Stoner and published by Rodale Press in the United States. The book establishes an excellent argument that the flush toilet is a disaster in suburban areas, where disposal becomes an immense problem. Although we live far from the suburbs, we decided to experiment with a composter. Our design ideas included a desire to have the toilet indoors for convenience. It had to be well-built and attractive, both for our satisfaction and just in case the authorities come inspecting.

Principles

The whole idea of composters is to make the process of breaking down **aerobic** (with air) rather than **anaerobic** (without air). Flush toilets, whether part of a sewerage system or with a septic tank, and pan toilets are anaerobic because the wastes are liquid. The advantages of aerobic systems are that they are much less smelly, they produce a much better end product and they don't require a water system.

The pit toilet can be a cross between the two, depending on how much rain is about and the ability of the subsoil to hold or release liquids.

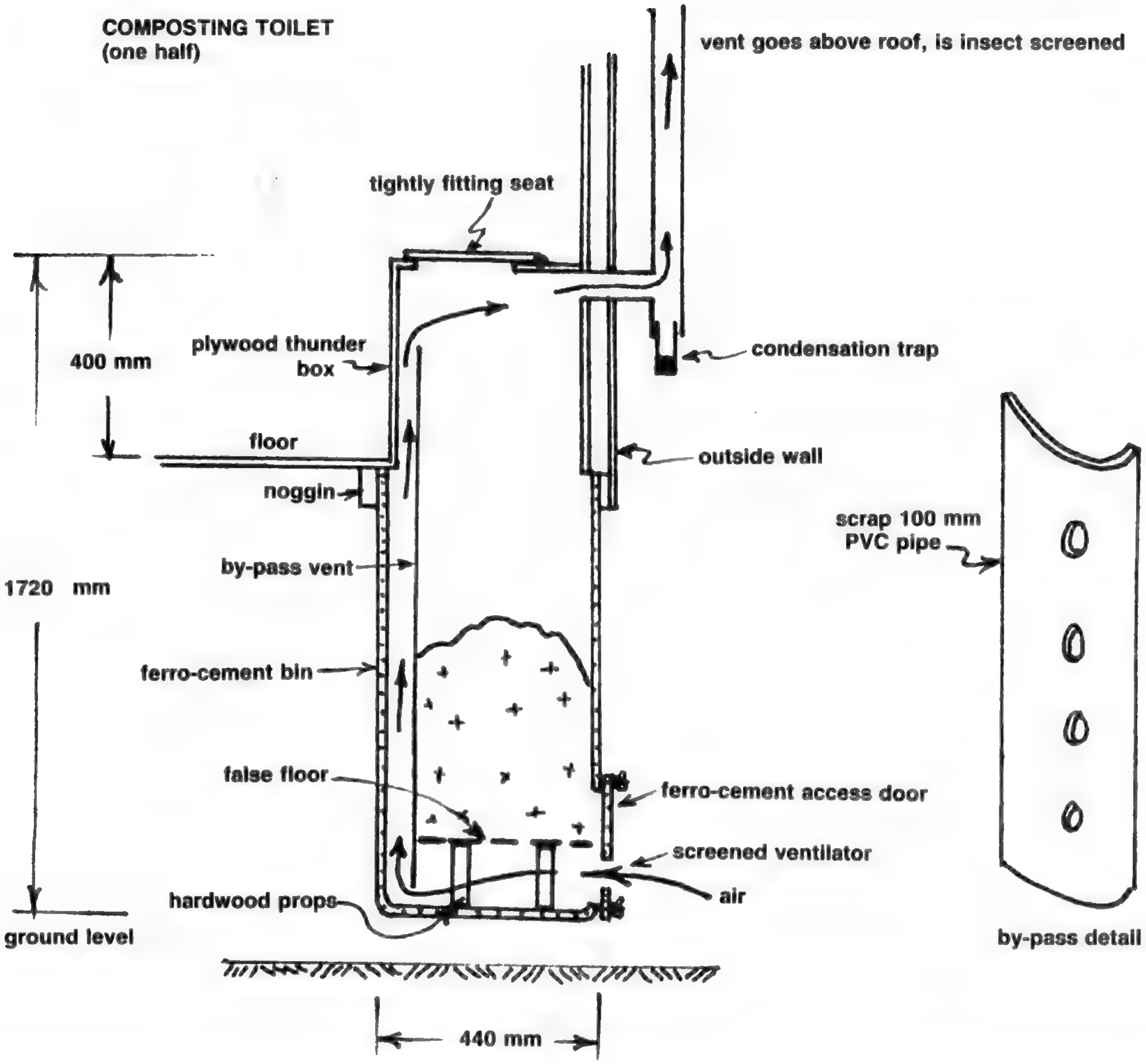
Construction

The 'Goodbye' book shows details of many composting toilets, but it tends to worry me a bit by emphasising complicated designs where the criteria seem directed towards enabling people who are used to flush toilets to transfer to a composter without changing their way of life. My view is that we must change our lifestyle and that it is a privilege to be learning to live with a different dunny. Not for us the fans, the heaters and the micro switches; we wanted simplicity of construction a true do-it-yourself job.

The two-holer is an answer. We use No 1 for six months or so, then while No 1 'cooks', we are using No 2. After another six months the clean compost is removed from No 1 and No 2 is processed while No 1 is back in use.

The shape of the bins is not important, but the ventilation certainly is. It is essential that the air is able to pass freely from the bottom of the bins, up through or past the pile and out through vent pipes to above roof level (see the sketch). We have about 1.5m space under the floor, which suited the bin construction. Ferro-cement worked very well as it is light and strong and we hung it from the floor joists and noggins. Many other techniques would be suitable, but if you build up brick or similar bins from a foundation on the ground, remember that there may be movement between the bins and a timber building.

The total volume of the bin plus thunderbox was about 0.4 cubic metres each, for two people. Larger families would need bigger bins. We made a plywood thunderbox and lids, with the two bins separated by a common partition. In fact it is my feeling that even the ventilation pipes out to the roof should be separate, as ours are, so


COMPOSTING TOILET
(one half)

that each bin can operate completely independently. The bottom of the bins is clear of the ground.

Ventilation

The vents to the roof are 75 mm PVC downpipe and the trap avoids condensation running back into the bins. It would be easy enough to bleed the condensation away through a small hole in the bottom of the trap, but I wanted to monitor the amount of condensation, so I have a small cup which is a loose fit in the tee piece and I just pull it out. The vent should be installed as high as possible under the seat to avoid pockets of stagnant air. The same general ideas would apply to a squat plate.

The by-pass ventilation is an important item, but it is easily made from a scrap length of 100 mm PVC pipe, cut into quarters and 12 mm holes were drilled along it to allow the air to contact the pile. Two of these were simply pushed into the corners of each bin, away from the access doors, and held in position initially by the false floor and by the pile as it grew.

Insect screening is essential on the top of the external vent pipes and across the ventilation space in the access door. Also the seat must fit closely to ensure a good draught and to keep out the insects.

Access doors. The access doors were also made of ferro-cement, which enables the irregularities of the access hole to be accommodated. The doors were made *in situ* with a sheet of plastic behind to avoid the mortar sticking to the bin. I arranged that four ends of the reinforcing mesh of the bins protruded through each door and these were threaded for nuts to hold the door in place.

The insides of the bins were painted with **Sami Seal** rubber coating as we thought this might help to avoid corrosion of the mortar. Also, the coating is very black, which helps if you have visitors who prefer not to see what is going on down there.

False floor. The false floor was made of scrap reinforcing, although scrap corrugated iron would do if a few holes were knocked in to let the air contact the base of the pile. Blocks of wood support the false floor above the bottom of the bin against the weight of the pile.

Operation

To start, a base of leaves, sticks, charcoal, paper, etc, is built on the false floor, simply sufficient to ensure that the pile does not work through the false floor. Charcoal helps to absorb urine in the early stages, but if any gets into the bottom of the bin it will evaporate away. We have a container of sawdust and drop a handful in after each use.

Like many local folk, we use a piddle bucket to help the garden, so we normally do not urinate into the toilet. But we don't get paranoid if our visitors wish to do so.

No 1 bin filled in 7½ months. The only problem we found occasionally was tiny insects like midges which seemed to breed in the bin in fair numbers. These may be the 'filter fly' of the sewerage treatment plants. We could not say that the smell is the same as a flush toilet; but we do say that mostly it is practically odourless and certainly inoffensive. It is a great improvement on the pan or a pit dunny.

We threw some comfrey leaves into No 1 and closed it up, but of course most visitors want to look. To avoid confusion, we put a pot plant or the sawdust container on the lid of the bin not in use. As the months went by, the pile reduced in size and separated from the walls of the bin, which further helped the air to make contact.

No 2 bin filled in six months because we decided to add the kitchen scraps and being winter the ash from the pot-belly stove also went in. The effect of this sort of experimenting can only be determined by experience.

So, after 13½ months, came the great day when we opened No 1. We found precisely what one would expect from a well-managed compost heap. In fact, if you didn't know, you couldn't tell the origin of the mixture. It was moist and pliable and came away from the walls of the bin so cleanly that there was no need whatever to clean the bin down.

It is probably safe to use the compost generally in the garden, but we preferred to use all 19 buckets (115 kg) around our fruit trees. They loved it! We left about 50 mm in the bottom of the bin to form the starter for the new pile. The whole operation took about one hour and No 1 was ready for use again.

Condensation: The condensation seems to average about half a cupful each day and less during periods of low humidity. During the cooking time, condensation reduces to nothing over a month or so.

The next step is to insert a temperature probe and observe how the pile is working. I guess that would be ideal — to keep the temperature high by controlling the mixture — but in our experience so far, not at all necessary.

Compromise pit toilet

The sketch shows the temporary toilet we used during house construction. This is a compromise which may be useful if you live on the side of a hill. The design attempts to keep the pile dry and has the false floor, by-pass and vent. The pit never fills with ground water and works very well. The design seems to lend itself to having two pits, which could be emptied and re-used indefinitely.

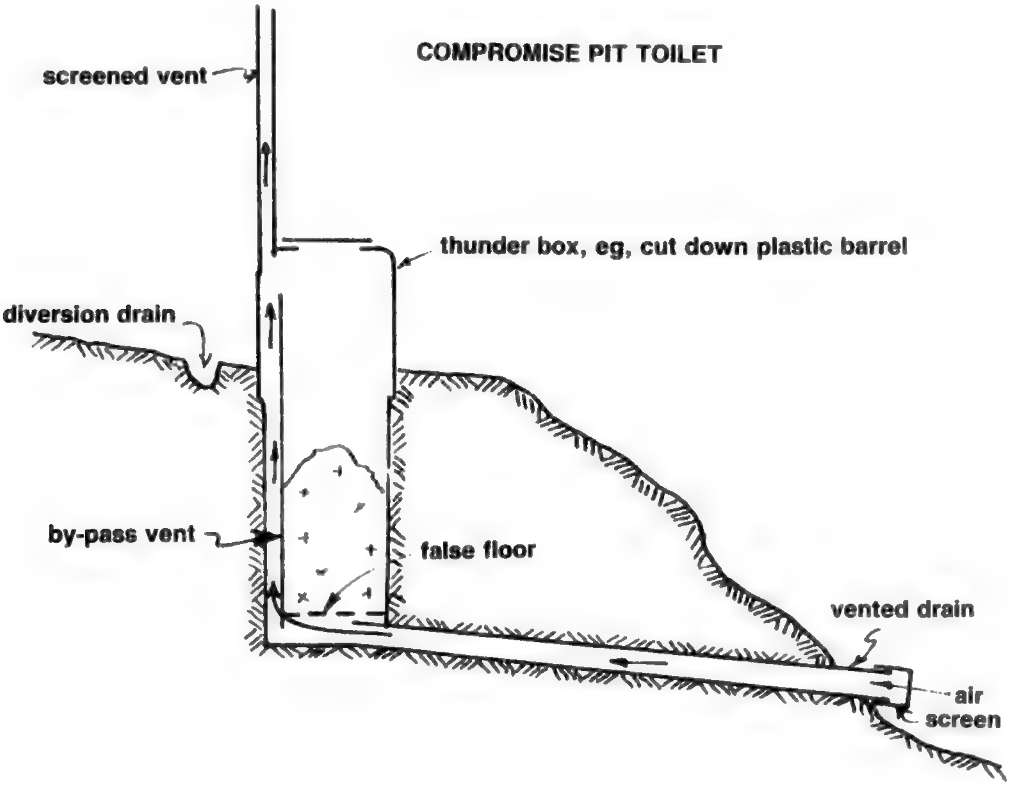
If seepage water runs out of the drain it probably has minimal contact with the pile, but it would be better to run it into a bush area, away from watercourses.

Incidentally, we achieved a very cheap construction for our temporary toilet with walls of wire netting. Bracken was woven into the wire netting. By the time the bracken was disintegrating, the jasmine and honeysuckle had covered the whole outfit.

Conclusion. Composting toilets certainly work and can be built cheaply. What is more, they are remarkably silent!

I conclude with a quote from the sewerage engineer — "It may be only excreta to you, but it is bread and butter to me".

COMPROMISE PIT TOILET



ELECTRICITY from the wind

Fitting a four-bladed Dunlite propeller to a tower-mounted generator 'in the field' at Timboon, Victoria.

By Tony Stevenson

Wind powered generators can be an excellent method of obtaining electricity in remote locations. The main requirement, of course, is that the location is exposed to reliable winds.

Many areas in Australia have good winds, particularly in southern West Australia, South Australia, Tasmania and southern Victoria. There is good wind potential in many parts of the other states.

In my role of designing solar, hydro, wind and motor driven generator systems, I find there are many situations where wind or wind/solar offers the optimum potential.

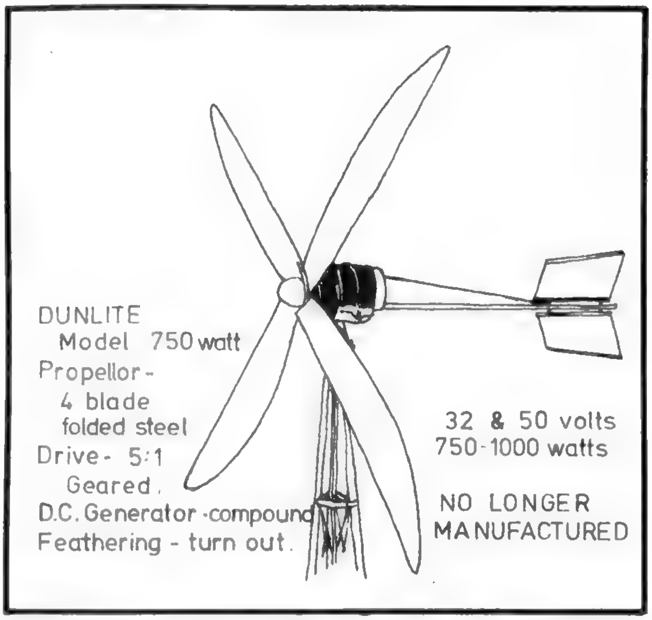
Wind generation is viable when over 1 kWh of electricity is required each day and the average wind speed is above 15 kilometres per hour. For smaller home energy systems, solar cells are usually better even in a windy area, unless the site suffers form extreme cloud or fog.

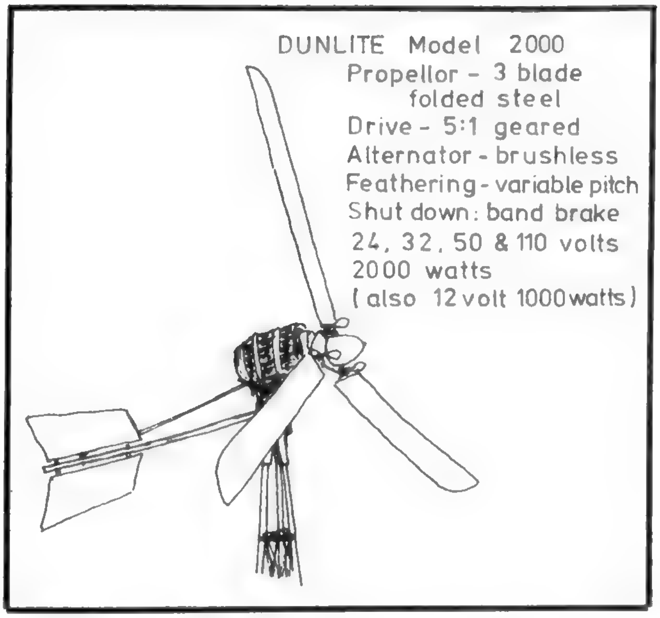
It is often difficult to know what wind speeds are available in an area. Weather Bureau figures are a help, but not much more. They should be obtained if they are available. I often get more useful information from locals, particularly people who have windmills on their property, as they have usually noted the strength and availability of the wind.

A modified 2kW Dunlite wind generator with a three blade rotor mounted on a 24 metre all-weld tower at Foster, Victoria.

It is a great advantage if wind measurements can be obtained on the property as the performance of a wind generator can then be accurately predicted. Ideally, records should be taken for 12 months if possible. As most people do not have the resources, finance and time to do an accurate monitoring, it is a matter of weighing up all the information available to decide if a wind generator will be suitable.

Wind or solar? Commonly, the decision will be between wind and solar cells. As solar electric systems have a low maintenance cost and wind generators require some main-





tenance, the wind should produce more power for the cost than solar if it is to be utilised. **I feel wind should produce twice the power at a given site for it to be used instead of solar. In good wind spots a wind generator will often generate 10 times the power that the same investment in solar would produce.**

Towers and Turbulence

If you conclude that wind is a worthwhile source of power, you then have to pick a position for the tower. This is a computation of tower height, best wind position and the cost of transmission cable. In the majority of cases, the best site is immediately obvious. In other cases the factors must be carefully weighed up and often a few calculations must be done.

For example, a person with a hill behind his house may have to strike a compromise between having a small tower on top of the hill but a high cable cost, compared to a high tower next to the house with a minimum cable cost.

Siting the tower well and using a good height is important for two reasons. Firstly, much more power is available in a strong, steady wind. **As the power in the wind is proportional to a cube of its velocity (ie. doubling the wind speed gives eight times the power), a bit more wind means a lots more power.**

Secondly, in places where people have experienced trouble with wind generators, it is usually in a position which has trees or other obstacles nearby which cause turbulence which can result in the failure of parts of the wind generator.

It is no good at all trying to skimp on the tower height. **In fact, I would go so far as to say that the secret of a good wind system is a high tower.** Get at least 6 metres above any obstacles and use a 12 metre high tower even on a grassy plain.

I have worked with many types of tower, but I like the conventioanal galvanised iron lattice tower the best. It is easy to transport and assemble, requires minimum concreting at the base and is easy to climb. I don't like the idea of a guyed tower, even though they may be cheaper. Guy wires are vulnerable, ugly and in the way. Free standing towers are much better.

Steel and concrete poles look great, but there are problems with transport and accessibility. It is much more difficult to climb a pole than a tower. A pole generally needs more concreting at the base. We have recently developed a new lattice tower with a height to base ratio of 6:1, which looks nice as it isn't as wide as the old towers.

A wind generator tower may be erected by pulling it up using cables, of lifting it with a crane. Alternatively, you can build the tower from the ground up, which is what we have to do in remote places where no crane is available.

The wind generators **Survival Technology** has used are all horizontal axis, with two, three or four high speed aerofoil blades. Despite a lot of diverse ideas, I have not seen another design as practical as this one. The only vertical axis unit which can approach this is the **Darrieus**, or egg-beater rotor or a variation of this with straight blades. They are not far off in efficiency, but suffer from starting problems.

Other designs, such as the **Savonius** rotor, are too slow and inefficient for generating electricity, though they may make good water pumping machines.

We have used a lot of older reconditioned wind generators. There were once quite of lot of these in Australia, especially in South Australia and western Victoria. By and large, they have turned out to be better than many of the new machines available. We are presently carrying out a development project to produce a new, reliable and cost effective wind generator. This is a result of not being able to get a good supply of wind machines.

Cut In. A good wind generator will cut in at 10-14 kph wind speed and produce its rated power at around 40 kph. This means that some power is generated even in light winds. Most plants are built with a governing system to limit them in strong winds. They should be shut down in a big storm. This can be done automatically.

The amount of power generated depends on the size of the wind generator and the wind energy available. We do calculations to see how well a system will work. **A rough rule of thumb is that a 1 kWh machine in a 16 kph (10 mph) average wind velocity will produce 100 kWh per month.**

We install or design systems using 50 W to 5 kW machines, so the range is quite large. However, for a low energy home the best size range is from 500 W to 2 kW,

A 22 metre all-weld tower and Dunlite wind generator being erected with the aid of a mobile crane at King Lake, Victoria.

This 12 metre all-weld tower and Dunlite wind generator was pulled into place using a cable and pole brace at Timboon, Victoria.

depending on which electrical appliances and machinery will be run. Some systems may operate a refrigerator, freezer, washing machine and many other big appliances, though the majority of households using a wind generating system require much less power. If the wind is not reliable an LP gas fridge is used.

Power is transmitted from the wind tower through a cable which usually runs underground. If the tower is close to the house or a shed housing the battery bank, the cable can be 'swung' directly from the wind generator to the building. These cables are connected to the control panel which includes a voltage regulator, a device which stops the batteries being overcharged. Power then gets directly to the load or into the battery bank. Sufficient batteries are needed to store 3-5 days power. Deep cycle lead acid batteries are common, though nickel cadmium batteries may also be used.

Different voltages are used, depending on the size of the system: 12 V for small systems, 24 V and 32 V for medium and 110 V for large systems. Inverters, which have improved out of sight in the last few years, are used now for all except the small 12 V systems. They are now very efficient and reliable, so 240 V AC systems are usual, though often lights and a pump will be run on DC. However many houses are wired for 240 V lights, so we then run everything through the inverter.

The majority of wind generator systems also incorporate a 240 V motor generator to act as a backup for low periods and to provide peak 240 V power. This is often an optimum system because large appliances, such as an automatic washing machine, can be run using only a small windplant.

At **Survival Technology** we are doing quite a few hybrid wind and solar electric systems. This usually guarantees a good spread of power through the seasons, taking advantage of mixed energy sources. If anyone interested in wind generation needs help they are welcome to contact me.

Tony Stevenson, Survival Technology, 66 Maroondah Highway, Croydon, Victoria, 3136.

earth people write

Dear friends,

Recently I purchased a copy of **HARD TIMES HANDBOOK** and have now started to plan the growing of all our vegetables. I am not a gardener but the info in the book will get me going okay I am sure. Thank you for putting the book on the market.

Thanking you, L. M. Fraser, Koongal, Queensland.

Dear friend — Rose-Marie and John Loro found that their backyard food garden helps them to make ends meet. Take a look at the photos of their produce in Vegie patch revival on page 10 in this issue — Keith & Irene.

Dear Keith & Irene,

I am constantly delighted at the amount of useful information the back numbers of **Earth Garden** contain (that is not meant to be a put-down of current ones!). Now my children are into adulthood I am seeing my interest in your magazine in a new light.

Keep up the good work, Mary Walker, Woodridge, Tasmania.

Dear friends,

With our two girls, aged 5 and 6, we recently settled in a lovely little valley near Goombungee in Queensland, where we are going to have a go at self-sufficiency. Right now, we're only at stick-picking stage and we have cleared an area for organic crop growing, mainly for our own use. My wife is very interested in activities like cooking and sewing and crafts like embroidery and macrame and she's becomeing an accomplished spinner.

Once we've finished our stick-picking, fencing and laying out the garden, we want to build our own house from sandstone, lots of it here! We haven't got much experience in sandstone building except for a dog pen and we have started on the chook pen for practice. Of course, **Earth Garden** has advised us on some very useful books on this matter. At present we're living in the shed. We made a quite cosy living area in it, the stove is connected and we'll get our solar system working properly yet!

Are there any people in the Crows Nest-Dalby-Toowoomba areas whose interests are the same as ours? We would very much like to exchange friendship, ideas and experiences. Drop us a note and we'll call in or will send you a letter with a bit of a layout of where we are. It's pretty hard to find if you have never been here before.

In the meantime, Keith, Irene and Elaine, most of what we know about self-sufficiency comes from your terrific magazine. Keep it up please.

Love & Peace be with you, Bill and Iet van Vonderen, 'The Jungle', MS 1078, Goombungee, Qld, 4354.

Dear Friends,

We as a family have decided to all stick together in our endeavours to go back to the land. But where we are, here in the far north of Queensland, the prices of fuel, land and bare necessities is beyond a joke. Would anyone of the **Earth Garden** readers sit down and write to us and let us know the prices near you? It won't matter from what area you live in. We are going to read these hoped-for letters with an open mind.

Yours sincerely, the Keane Family, PO Box 2269, Cairns, Qld, 4870.

Dear Irene & Keith,

I first wrote to you in 1980 telling how we had decided to leave the suburbs and move here to Buchan. To do this, Don gave up a well-paid executive job in the city. Well, five years on, we still have no regrets.

We had bought an old house on one acre of land. It took a lot of work to renovate, but it was worthwhile. We have a good vegie garden and orchard which keeps us mostly independent for fruit the whole year. We have managed to earn enough money to live on by going into partnership with my son in the local carrying business (as Buchan is 50 miles from the nearest town most things come in by truck). When this got too heavy for Don, we took over the local garage, which we have run for two years.

Now it is time for another change, to what we don't yet know, but something will turn up. In the meantime we shall have a break and visit friends in South Australia and NSW. We are both physically fitter than five years ago.

We have met some wonderful people here. Don is now a local councillor and very involved with local problems. It takes a while to adapt from city life to the quiet of the country, but it's all worthwhile. Every day I look at this beautiful little valley and think how lucky we are to be here.

Love & peace, D. & I. Whiting, Buchan, Victoria.

Dear Keith & Irene,

We have broken loose from our conventional farm and are taking a couple of years to travel, first around Australia, to see where we want to settle in this lovely world. We are taking four of our children and our own off-road camping gear.

We would like to contact people who could give us a place to stay in return for labour on our way up the coast and then across the north of Australia. Like most people we have very little money, so we will have to work our way using Jim's considerable conventional and organic farming experience and my qualifications as a Registered Nurse.

Yours sincerely, Judith Finnerty, PO Box 20, Mortlake, Victoria, 3272.

Dear Earth Garden readers,

Attitudes of Shire Councils throughout Australia vary from sympathetic to openly hostile. Even though the same uniform building regulations apply within each State, their interpretation varies widely. Over-zealous officials may cauise heartaches and headaches for owner-builders.

It would be advantageous to prospective new settlers if the current hostile and sympathetic areas are identified.

A number of people have left our area following prolonged persecutions, prosecutions and jailings for 'breaches' of the building regulations. One family tried for eight years to obtain Council approval for their home before leaving it in despair. Fortunately, most new settlers are hanging on and we have formed a league to resist further injustice.

Our pamphlet **How to Resist Bureaucrats**, contains practical and legal advice, useful in the age of Big Brother. So if you feel you are being treated unjustly, don't despair. Send us a stamped SAE for a free copy. We would also be interested in case histories for our forthcoming publication **People versus Red Tape.** Names will not be revealed and all photographs will be returned.

With best wishes, John Wolf, Secretary, New Settlers Defence League, Box 46, Mallacoota, Victoria 3889.

Dear Irene & Keith,

I am a young mother of two. All I want is to take my children and myself away from here and live somewhere better. I have another year that I must spend in the city as my little girl needs to go to a special school for that time. I was wondering if there are people who live not too far from Perth who wouldn't mind having us for a little while over the August holidays, so that I can learn to milk a cow and make butter and cheese and have a look at the vegies growing and, I hope, help instead of getting in the way (oh yes, and the worst part, how to kill chooks)?

I'd love to hear from anyone for advice on my move and a friendly word.

Love to you and your readers, Piera Collins, 14b Lake Avenue, Shenton Park, WA, 6008.

Dear Keith & Irene,

Enjoyed the November issue **(EG44)** and thought the article by Harry Weller about the best and most practical on the subject of solar electricity that I've read so far. I'm glad to see that there seems to be less emphasis on things of the occult, Zodiac plantings, eastern religions, etc, in your magazine lately. I hope this trend continues.

Graeme Bryant, Borrolan, Queensland.

Lessons f

HOUSES CAN BE FIRE RESISTANT

By John J. Alderson

The Country Fire Authority Brigades fought to save the Goldfields Restaurant on the outskirts of Maryborough, Victoria, in this year's bushfires, but reluctantly they had to pull back due to the fierceness of the flames. It was later discovered, to the amazement of the firemen, to have survived. It is made of mudbrick.

Out of the 101 houses destroyed in the fire, which covered at least 1000 square kilometres, not one mudbrick building was burnt. It must be mentioned that in one case at least, that of Wayne Irvine who stayed to protect his newly-built mudbrick house, radiation did light some clothing inside the house.

A large old bluestone church, until recently being used as a home, was gutted and so was an old bluestone house at Dunach which was the first office of the Talbot Shire Council. A redbrick church at Majorca, used as a dwelling, was gutted as were several brick houses and the bluestone hall, once the Majorca Borough Offices.

Of course most of the houses in the area are weatherboard and, it must be admitted, most of those that survived the fire were weatherboard and of those most were painted white, which reflects the heat. Cement sheet literally exploded in the flames and fragments were often scattered for 50 or more yards around. It seems to be the most dangerous building material.

It must be pointed out that the overtaxed firefighters had to make decisions as to which house to save and which to leave to burn as they had no hope of saving all the houses. They gave preference to homes with permanent occupants. The same applied to caravans.

There is a lot to be learned from the latest fires.

The first and most important lesson that everyone must accept is that you must stay in your house and not run away. To leave the house is the surest way to lose the house. On the other hand, virtually every casualty in bushfires have been those who have been caught in the open.

Spot fires in the house can be put out with buckets of water if there is someone there to do it. If the house itself does catch alight, there is enough time to get out when the bushfire has passed.

Never panic. Panic can mean death and, at best, the loss of the house.

Building Materials

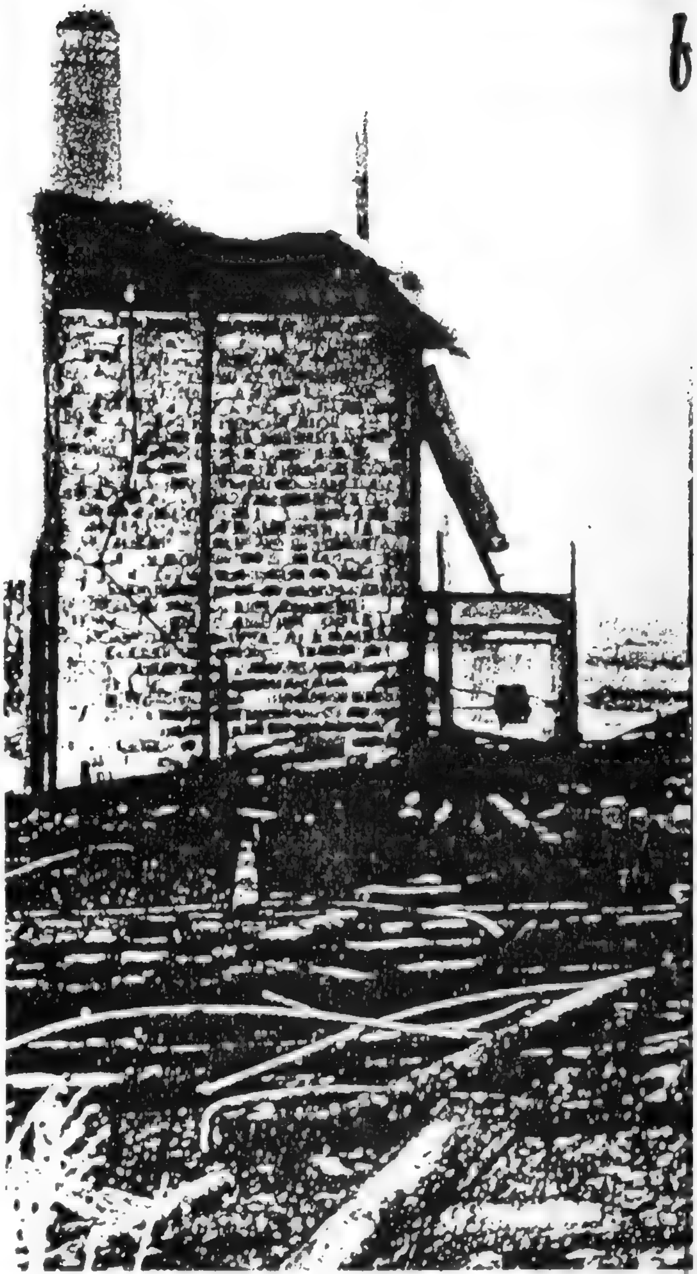
Authorities and others have advised on what steps to take inside the house. I am more concerned with the exterior. The fire resistance of building materials varies considerably. It is based more on the absorption quality of the materials than their inflammability.

Mudbrick will absorb more heat than any other building material. A bushfire just hasn't got the time to heat a mudbrick house to the point where interior fittings can ignite.

Stone must come a poor second, followed by **redbrick.** Probably there is little to choose between these two materials, but stone walls are usually thicker than brick.

Similarly, **brick veneer** has less heat absorption than brick and will conduct heat to the interior far quicker than even weatherboard.

Despite its ability to burn, **weatherboard** does resist fire and it is probably seldom set alight by radiation, but by flames from the ground fire. A coat of white paint helps a great deal.



Because it explodes, **cement sheet** seems to have the worst record of all, though it has been claimed that this is caused by the air inside the house expanding, which it is said may be stopped by leaving windows in the lee side of the house open far enough to let air out. However, my observation of cement sheet sheds that were open is that they exploded. If this is so a well-lined house could still survive the fire.

The absorption of a **metal clad** house is negligible.

from our re

If the sheeting is **aluminium** it will actually melt, or if the heat is intense, as in the Ash Wednesday fires, it will ignite and burn like a thermite bomb (which is fundamentally aluminium powder).

Moral: Don't build in cement sheet or sheet metal and in particular don't use aluminium.

Roofing. The roofing materials around where I write (Havelock, Victoria) are either galvanised iron or some form of roofing tiles. Cement sheeting may have been used occassionally, but I have neither observations nor reports about this, though I suggest that being on a slope it would not collect much radiant heat.

Tiles have a habit of allowing sparks to fly underneath, but a metal coated sheeting can help if it is put immediately underneath the tiles.

Concrete roofs are fireproof. So-called sod roofs are either covered with gravel (perfectly safe) or a no-dig garden, which would have to be saturated with water to be safe.

Windows. All windows should be equipped with sheet-steel shutters (not aluminium). It would be an advantage if they could be closed from inside the house as there is sometimes no time to go outside. Our fire covered the 1000 sq km in about 16 hours, but did 90 per cent of that area in less than half that time. **Doors** should be similarly protected.

Exterior. It is better if there is no inflammable material exposed on the exterior of the house. So make all verandah floors and walls and so on of concrete, mud, stone or the like. A concrete path should go right around the house and be kept clean. It would be nice to think that gravel does not carry fire, but I'm afraid it does.

The last and most important place where the fire may catch is in the roof water spouts and gutters. If there is time they should always be thoroughly wetted. This is a bit like the Council which, after their fire plugs proved faulty, passed a motion that all fireplugs must be tested before a fire. Corrugated iron can be cheaply and effectively bent nowadays, so the best spouting system is to have the roofing iron bend in under the ends to form part of a circle bending downwards. The spouting is placed under this, suspended on metal brackets and the fascia strip is completely covered. Water follows the curve of the iron and drops into the spouting, but debris and so on falls directly to the ground and thus keeps the spouting clean, except for windblown leaves.

Roof sprinklers are a possibility not to be dismissed if you have a good reliable pump and some consideration should be given to making sure that the engine is secure from fire. A sprinkler system surrounding the garden, if it is possible, may save a lot of the garden. But the garden may have to be sacrificed to save the house.

The realisation is dawning that we may have to think again about putting native plants right up against the house. Too many of them are surrounded by a cloud of explosive gas on a hot day. **Coprosma** and **boobyalla** are exceptions and will seriously retard a fire, though the regeneration power of the latter is less than the former. Wormwood seems to repel fire and recovers quickly. Deciduous trees like the mulberry, the willow and the poplar, steady a fire down. Indeed, most fruit trees will retard a fire, so will vines, including pumpkins.

The damage done to the trees will vary according to the intensity of the fire and the age and leaf cover of the tree, a quince for instance sustaining less harm than say a thinly leaved plum. Recovery can be remarkable, though I've seen trees which have died from the radiation from a neighbours paddock over 100 metres away. Heat radiation is more deadly than the flames.

Obviously it is easier to build a fire-resistant house than to fireproof an existing house, though this can be done. It's the cheapest insurance.

If you feel all this is impossible, plant some belladonna lilies. As I write this, a lot of houses I've known for decades are now only a patch of sooty ground with lovely pink flowers growing out the charcoal.

PAECHTOWN PHOENIX

Hahndorf, South Australia

By Liz Lewis

Right from the beginning the people of Hahndorf have been self-reliant.

The first settlers in the beautiful valley were some 200 people of 52 families who migrated from Prussia in the late 1830s when King Friedrich Wilhelm III decreed that the Lutheran and Reformed Churches in his country were to amalgamate and become one church under one government. Severe persecution took place when the Lutherans refused to conform.

Pastor August Ludwig Kavel, a deposed Lutheran minister, made arrangements with a wealthy Londoner, George Fife Angas, to finance the Lutherans' passage to the newly developing colony of South Australia. The first two boat loads of passengers settled on land owned by the philanthropic Angas at Klemzig, now a suburb of Adelaide.

In July, 1838, 199 more people left Hamburg on the Spanish ship *Zebra* under Master Captain Dirk Meinertz Hahn. After an unpleasant voyage of 129 days — and with six adults and five children less — they arrived at Port Adelaide in January, 1839.

Impressed with the clean, devout, hard-working Lutherans, Captain Hahn stayed in Adelaide to see his passengers settled. He travelled to Mt Barker with William Dutton, John Finnis and Duncan MacFarlane to inspect 4000 acres which the partners had brought for $8000 from the Crown and known as the Mt Barker Special Survey.

Hahn made arrangements with the partners to rent 150 acres on behalf of 52 families and amongst other things to supply fowls, cattle and pigs on credit to the Lutherans.

Since a fee of £7 was asked to cart their goods from Port Adelaide 18 miles inland to the lush green valley in the Adelaide Hills, most of the immigrants had to drag their belongings on primitive handcarts of their own construction.

The first winter was horrifying and the settlers were reduced to eating boiled grass, roots, kangaroos, possums and lizards. They built simple huts of packing cases reinforced with mud and branches and with dirt floors and kangaroo grass thatching.

As often as not the ground was cleared for planting with a forked branch and one man used his wife to pull the plough. The barley, wheat, vegetables, butter and eggs which were eventually produced found a ready market in Adelaide. To take the goods to town, women and girls would set out from Hahndorf at midnight to walk the round trip of 36 miles with their laden baskets. On the return trip the baskets were full of sugar, tobacco and other items which they did not produce themselves.

In October, 1840 the Lutherans resolved to buy the land from Dutton, Finnis and MacFarlane at £7 an acre, plus 10 per cent to their benefactors. With their frugal and hardworking habits the settlers prospered and began to build more substantial houses with wooden floors and half timbered walls in which pickets of wood were inserted vertically, then plastered with mud, giving a thick, weatherproof finish which has lasted these 140 years with ease.

Most of the Hahndorf farms had a bakehouse and a smokehouse which burnt damp sawdust to cure bacon, ham and many types of German sausage, such as *Mettwurst, Bratwurst* and *Leberwurst* which was made after each slaughtering day. The bakehouses were large enough to bake a dozen loaves of bread at a time and Hahndorf shops sell the homemade *Beinstich,* German breads and Kitchener buns still made in the kitchens of German descendents. The remains of the old bakehouses and smokehouses are still standing in many of the old farmyards.

Nixon's mill on Windmill Hill, Hahndorf.

Hahndorf settlers grew enough grain to justify the building of a windmill by a Mr Nixon which stands on the hill behind the village, though its enormous millstones are in the yard of St Michael's church. Right in the main street Mr Wittwer built his flour mill which remains today (apart from the corrugated iron third storey) in use as a restaurant and art gallery.

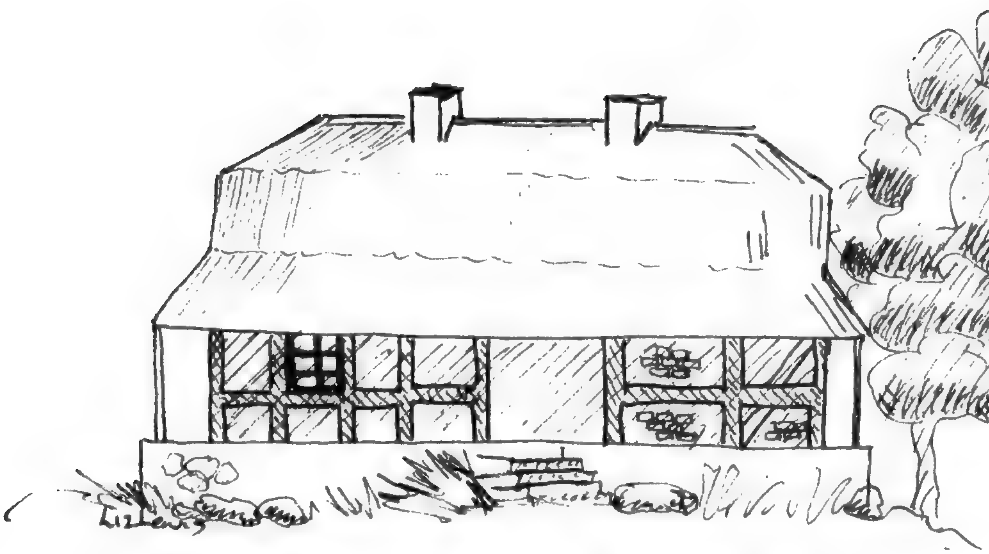
Hahndorf's local hero is the German-born water and oil colourist Sir Hans Heysen who lived with his family in or quite near the village amongst the tall eucalypts which he painted all his life. In March, 1907 the Heysens rented a small cottage in Hahndorf's Billygoat Lane amongst the daub-and-straw gabled cottages with their straw thatch and sapling rails, hand ploughs and horse drawn implements inseperable from the German culture of the village.

Hans Heysen loved the old German farmers and sketched and painted the local scenery earnestly. By 1912 the little cottage was overflowing with the four children and the opportunity arose to buy The Cedars, a lovely house on 36 acres. Hans gambling on the success of an exhibition he was to have in Melbourne, bought the house and lived there for the next 55 years.

The Paechtown Phoenix.

In 1846 Johann George Paech, who had previously lived in Hahndorf, bought 1175 acres two miles south of the village in the name of Johann Freiderich Paech.

Johann George and his three sons built three cottages, two of one-storey and the third of two-storeys in the half-timbered, hip-roofed style. A fourth cottage (the first one you see on entering the town) was not built by the Paech family.



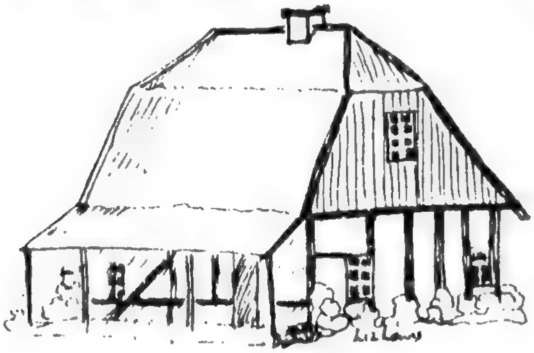
Single storey half-timbered house at Paechtown, now being rebuilt.

These cottages were built on an adzed timber framework which carried the weight of the roof and ceiling while the spaces between the timbers were filled in with hand-cut bricks. Mud mixed with curry-combed horse hair was packed between the bricks and the timber. The house roofs were at first thatched, then covered with cedar shingles, which again was later covered with corrugated iron sheets. Dowelling was used to hold the timber pillars together.

In the 1870s the interior walls, previously left as exposed brick and timber, were plastered. Ceilings were made either of pug, a good insulator, or calico.

The Paech's grew wheat, onions and vegetables and raised cattle. The brothers sometimes carried on feuds, for which the family became famous, which occasioned the shooting of one anothers geese or ducks. The family were the sole owners of Paechtown until 1960, when J. E. Paech, grandson of Johann George, sold the land.

During the next 10 years one of the cottages was completely restored by its new owner, who found he had to remove all the bricks, knock off the mortar, reverse the bricks and replace the morter. He even replaced the cedar shingles. Another, a beautiful two-storeyed building with its double verandahs, was soon returned to its former beauty.



Typical half-timbered house in Hahndorf.

In the 1970s the third Paech cottage was restored and the fourth at the beginning of the town was bought and restored, so for the next few years the little town was an example of 19th century Silesian architecture, with its winding road framing tall Goldenrod flowers, each cottage nestling in its own picturesque cottage garden. One cottage had a flock of peacocks roaming loose.

Then on February 16, 1983 the most tragic and horrifying disaster struck the Adelaide Hills, the second Ash Wednesday bushfires. The day dawned hot and a nasty north wind blew strongly. By mid-morning a cloud of red dust had rolled in from the north. Then as a result of power lines blowing together, sparks blazed from the shorting electric wires and started fires, one beginning west of Hahndorf.

Within minutes the resulting grassfire was out of control and roaring across the back of Hahndorf. Streamers of fire 40 yards long were blowing out from the front. Right in its path was Paechtown.

The first house to go was the third beautifully restored cottage. The owner stayed to fight as long as he could, until the cedar-shingled roof exploded. Then it was the two-storey cottage. Thinking the danger was past, the owner walked up to his father's house, only to see his own home burst into flames behind him, set alight by sparks blown under the eaves into the ceiling. Next day amongst the blackened, smouldering paddocks only one cottage remained of the four.

The courage of the residents of the Adelaide Hills after this second Ash Wednesday bushfire has become legendary, as has the help so freely given to those affected. Hundreds of homeless were housed, fed and clothed by friendly neighbours as well as by others remote and unaffected.

Two days later many volunteers were clearing the ruins of one of the Paechtown cottages, stacking the old handmade bricks and sorting through the rubble. The family moved temporarily to a house in Hahndorf, but within months they had moved into their newly rebuilt barn and had begun work on the house.

The timber frame was erected, using locally sawn hardwood with the adzed finish and the joints properly pegged with wooden dowels. Restoration is continuing and there are plans for another cottage to be rebuilt.

A taste of Tanzania

by Sophie Masson

Tanzania is a big, ethnically diverse East African nation, bordering Kenya and Uganda to the north, Burundi and Rwanda to the west and Zambia, Mozambique and Malawi to the south. To the east lie the bright waters of the Indian Ocean and the island of Zanzibar, politically a part of Tanzania.

Tanzania is a land of contrasts: from the coral beaches of the coast to the wild green forests and arid Maasai steppes in the north; from sprawling dusty cities to isolated highland villages. There are 150 tribes in the country, which ensures an extremely interesting and rich national life, although materially speaking the country is in desperate straights.

We spent a wonderful few weeks there last year travelling from south to north and then to Tanga on the coast, finding friendliness and hospitality everywhere. We travelled by public transport or hitchhiking, staying in inexpensive guesthouses which are often owned by the cooperatives which run Tanzanian agriculture. Despite the disorganisation of transport, the awful roads and the general lack of material comforts it was a great experience.

Food of course contributes to such an experience. Tanzanian cooking is as varied as its ethnic makeup and reveals influence of African, Arab and Indian cultures. There are curries in every shape and form, starchy peasant dishes of maize and sweet potatoes, meat from traditional domestic animals as well as the more exotic, but legally 'culled', zebra, elephant and wildebeest. There is variety of fruit and vegetables, marvellously refreshing sugar cane and lemon juice freshly squeezed and sold at every street corner.

The markets are full of squatting tribespeople, their wares spread out in front of them: maize, bright peppers tomatoes, strings of onions and garlic, the pervasively addictive herb coriander, local delicacies such as roasted chilli caterpillars, fried corn cobs, split coconuts, red-skinned bananas, bright orange mangoes and jakfruits. Sates of goatmeat are grilled as you wait and you can buy samosas, crisp triangles of filo-type pastry filled with curried meat or vegetables or indulge in sweet pastries and cups of very hot, very sweet clove-flavoured tea.

Tanzanian coffee is excellent, although unobtainable abroad and even difficult to track down in the country itself outside the Tanzanian Coffee Authority bars situated centrally in each town.

TANZANIAN COOKING

For a taste of Tanzania I have included recipes which I believe reflect the country's great diversity, with a list of commonly used spices. All the ingredients are easy to obtain in Australia.

Spices

Ginger, tumeric, garlic, cinnamon, black and white peppers, capsicums, chillies, coriander (both the fresh green herb and the seeds), cardomum, cummin, mustard (used whole and ground), nutmeg and mace and curry powder.

Curry Powder

A homemade curry powder may be made by combining tumeric, coriander seeds, cardamom pods, ginger, chillies and garam masala.

Banana soup (Ndizi Mtori)
½ kg soft bananas
¾ kg shin of beef
1 large potato
1 chopped garlic clove
1 large chopped onion
1 tablespoon butter
¾ litre water
salt to taste
glass coconut milk (optional)

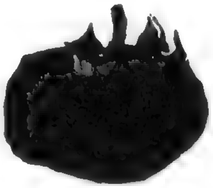
Peel, slice bananas lengthways, removing the seeded centre. Wash in hot water. Put all ingredients to colour gently in the butter. Cover, then slowly add water and bring to the boil. Simmer for about 1½ hours, then remove meat and whisk the soup thoroughly. Add coconut milk at the last minute and serve. Serves about four people.

Maize and spinach mix (Ntunyula)
bunch spinach
corn off the cob (about 200 g)
2 tablespoons oil
salt and pepper to taste

Cook corn and spinach together. Remove from heat when done and put in pan with oil. Mix well, add salt and pepper, cool. Serve cold with sour cream or yoghurt. Serves four.

Tomato and onion sauce
1 large onion
2 large tomatoes
2 tablespoons oil
1 teaspoon tumeric
1 tablespoon lemon juice
salt and pepper to taste
¼ litre coconut milk or chicken stock

Peel and chop onion, tomatoes and garlic. Put all the ingredients (except the milk) in a pan with the oil and fry gently until tomatoes and onions are very soft. Stir well, then add coconut milk and cook gently for about 10 minutes until the sauce thickens.



Coconut pilau
½ packet rice
½ kg diced beef
1 chopped tomato
1 chopped onion
1 tablespoon oil
2-3 cardomom pods
piece cinnamon bark
salt to taste
½ fresh chilli
¼ litre coconut milk
2 crushed cloves garlic
few drops lemon juice

Heat oil and fry onion and garlic. Add tomato, then spices and meat. Add coconut milk to mixture, stirring occassionally. Wash rice and add to milk and meat mixture. Cook gently till the liquid is almost dried up, then put in the oven for a further 10 minutes (moderate oven). The tomato and onion sauce can be served with this dish.

Braised pineapple chicken
1 medium sized chicken
½ kg yams
potato, sweet potato, carrot (choose one)
3 tablespoons oil or ghee
1 teaspoon curry powder
¼ litre unsweetened pineapple juice
1 large chopped onion
salt and pepper to taste

Peel the vegetables, cut into thick slices and stand in a pan of cold, salty water. Cut the chicken into four pieces. Heat the oil and fry the onions and other seasonings. Add the chicken and fry on both sides till golden. Remove meat and saute vegetables arranged underneath. Add the pineapple juice, then sufficient water to cover the vegetables. Cook, covered, for about 35 minutes, then remove pan from heat and finish cooking in oven for about 15 minutes. Serve with fried sweet potato.

Green split bean curry
1 cup split beans
1 finely chopped onion
small piece chopped ginger
½ green chilli
1 teaspoon coriander seeds
2-3 cloves garlic
2 teaspoons tumeric
½ litre coconut milk
salt to taste

Soak beans overnight. Grind coriander seeds, ginger, garlic and chilli and mix with salt and tumeric. Boil beans in coconut milk till soft. Add ground spices and onion. Continue to cook until curry becomes thick, but not dry. Serve with vegetables.

Avocado apricot jelly
1 medium ripe avocado
4-5 stewed apricots
1 packet gelatin
¼ litre hot water

Cut avocados into rings. Arrange them in the serving dish. Place apricot slices inside the rings. Prepare sweetened gelatin. Pour over fruits and leave to set. Serve.

Pineapple fritters
120 g flour
1 egg
pinch salt
¼ litre milk
1 level teaspoon baking powder
6 rings large ripe pineaple
sugar for coating
oil for deep frying

Make a coating batter from flour, egg, salt, milk and baking powder. Heat oil until hot. Turn rings in batter, then fry them till golden brown and coat with sugar.

Lemon tree very pretty

By Steve Fitzgerald

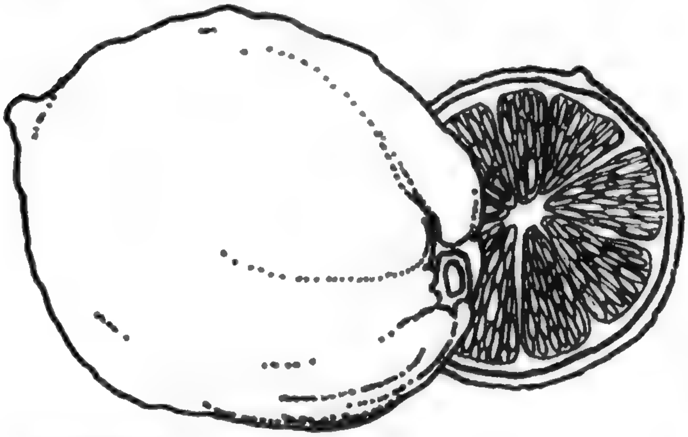
This article has its origins in an unwise boast. I said that we use up any fruit or vegetables that are given to us or that we swap for something else. This statement led to us being given three chaff bags **full** of bush lemons; in all 410 lemons. Using them all up before they went mouldy proved quite a challenge to my claim. Here are some of the ways I found:

Marja's lemon butter

6-8 eggs*
8 oz black sugar
3 lemons
¼ lb butter

Beat the eggs. Add grated lemon rind and juice. Put butter in a double-boiler. When butter is melting, add sugar and stir. Add eggs and lemon. Stir until it thickens and pour into sterilised jars.

* Arrowroot may be substituted for two of the eggs for thickening, but it's not as nice.



Lemon pickle

10 lemons cut into pieces (with seeds removed)
juice of 5 or so lemons to cover lemon chunks
homemade green Garam Marsala

Put lemon pieces in alternate layers with garam massala in a sterilised preserving jar. Place this in a warm spot, preferably in the sun.

Shake well and relieve pressure every two-to-three days for two weeks or so in summer and three-to-six weeks in colder times.

Leave for another four weeks, checking weekly until it's ready. This will store for a long time, though the crispness of the lemon peel will lessen with time.

A nice accompaniment for curries and fish.

Lemon sauce

juice of 10 lemons, thinly peeled or grated
rind of 5 lemons
1 tablespoon oil
sea salt to taste
homemade green garam massala.
2 tablespoons honey

Juice the lemons, carefully excluding the seeds.

Finely chop, or grate the peel of 5 of the lemons. If a peeler is used, try to avoid the white pith as this can cause bitterness in the preserve.

Warm the oil. Add greed garam massala and stir-fry until it starts to brown.

Add juice and grated or chopped peel and reduce, stirring occasionally, to half. Store in sterilised Tamari and other sauce-type bottles. . .Ready to use in a fortnight, but matures with age. Shake before use.

Good with rice dishes, curries, roast vegetables and meats.

Green garam masala

1 teaspoon coriander seeds
1 teaspoon cumin seeds
½ teaspoon cardamon seeds
1 teaspoon mustard seeds
10 peppercorns
4 cloves
1 inch cinnamon bark
5 cloves garlic
3-4 chilli peppers

Grind the dry ingredients until fairly fine. Add chillies and garlic and mash together until the mixture is blended.

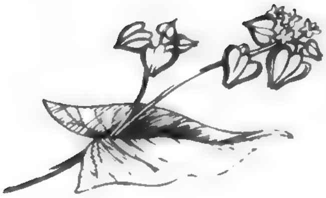
LEMON WINE

juice of 40 lemons
thinly pared rind 20 lemons
13 lb sugar or
18 lb honey
small handful sultanas
1 sachet general purpose wine yeast
1 tablespoon yeast nutrient or
2 B vitamin complex tablets

Before you start it's a good idea to take a look at my article on **Home brewed beer** in Earth Garden 38 or in the HARD TIMES HANDBOOK.

Buy a plastic beer keg or fermenter. Sterilise keg and leave for 1 hour, then rinse it out with clear water. Add juice, carefully strained of any seeds. Add lemon peel and sultanas. Dissolve sugar or honey in hot water. A few rinsings may be needed to empty the bucket/container and warm water works best for this. Fill the brewing container to the top of the indents/handles on the side. This water should be at 23°-26° C, but I find the yeast very forgiving and usually just stick my clean finger in to test it. Add the yeast when it is about blood heat. Add sachet of yeast and 1 tablespoon of yeast nutrient. Leave for two to three weeks. Strain into 5 litre/1 gallon glass jugs. You can buy these from bottle recycling depots in your area for about $1 each. Pubs buy bulk spirit in them. Remember you must clean and sterilise them. Fit the jugs with a bored rubber bung and airlock, which should be obtainable from your local brewing supplier. If rubber bungs of the correct size aren't available, you could try asking a friendly chemist. Siphon this into sterilised jugs after 6 weeks, leaving the sediment. Wait another 6 weeks and bottle. Lemon wine is then ready to drink immediately, but it will improve with at least a month in the bottle if you can wait.

Well, I hope reading this article has sweetened your thoughts about all those lemons on the tree in the backyard.



BUCKWHEAT

Our latest venture at the House of Prayer (see **Coffee — from tree to crop** in Earth Garden 38) has been with buckwheat which grew very easily and quickly on our rather poor soil. We harvested it by hand (with difficulty) and eventually produced buckwheat pancakes which were really good. I then hoed the bed and without planting any more seed we now have another crop about three times as big!

Sister Helen, Sisters of the Church, Dondingalong, NSW.

EATING BUCKWHEAT

Sister Helen's note on growing buckwheat got us interested enough to experiment and prepare some buckwheat dishes for ourselves one cool, rainy day recently.

Buckwheat is not a true cereal grain (they are actually types of grasses), but the three-cornered seeds of a plant which is a relative of rhubarb, dock and sorrel.

It can be bought as whole roasted buckwheat and used in that form in soups, stews and casseroles in place of rice or as flour to use in batter or pancakes.

We bought ours from the health food shop as cracked buckwheat, also known as Kasha or buckwheat groats. In this form it may be soaked overnight and eaten as porridge or breakfast cereal, a traditional favourite in Russia. They say the Soviet Army marches on Kasha.

KASHA

1 tablespoon vegetable oil
1 beaten egg
½ teaspoon salt
1½ cups buckwheat groats
2½ cups boiling water

Mix the groats and egg. Heat the oil in a saucepan and add the mixture. Stir well for a minute or so. Add water, then simmer 12-15 minutes with the lid on. If the water is not all absorbed, simmer a little more without the lid. This is rather like a pilaf.

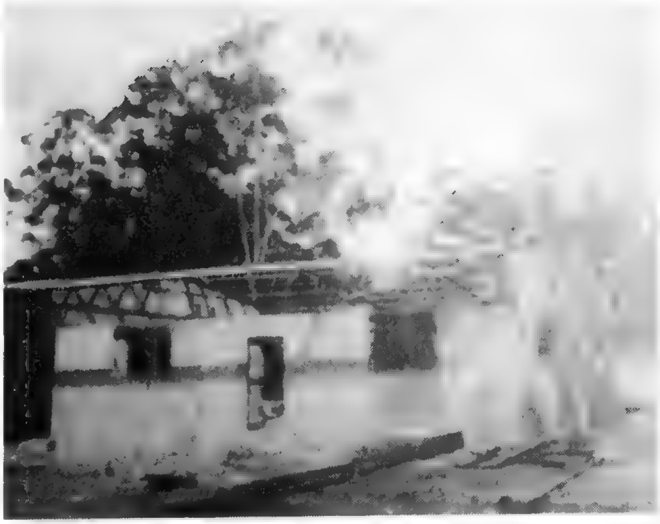
BUCKWHEAT SLICES

Mix cooked buckwheat (whole or cracked) with cooked rice in about equal parts. Add chopped onion, parsley and sage. Add a little water and plain flour to bind it and soy sauce or tamari. Pour into an oiled dish and bake in a moderate oven for about 50-60 minutes. Serve in slices

BLINI (Buckwheat pancakes)

1 cup buckwheat flour
1 cup wholemeal flour
1½ cups milk
1 beaten egg
pinch salt

Mix or blend well to make a thin batter. Heat a dob of butter in a frying pan and fry until golden brown. We found buckwheat pancakes sweet and very filling. You need only half a cup of milk to obtain a thick batter which may be used to make fruit, vegetable or seafood fritters or tempura.



The first two rooms of our house, all iron at the sides.

OUR TIN HOUSE

By Joane Morish

As a tribute to my late husband, I want to tell readers about our unusual house.

Early in our marriage we paid cash for our land, some 26 acres, which left us with about $2000 to put up our house.

I was offered, to quote him: "A tiny finished brick or a rambling huge sprawling farmhouse, probably never finished." I chose the latter.

Full of resourcefulness and initiative, he set out to review the local situation. He heard of a large commercial poultry shed destined for demolition. He submitted a tender to demolish and remove the shed, hired an end-loader and transported it piece by piece to our block.

Next a concrete slab, with broken bottles in for fill and our first two rooms of galvanised iron were up. The only help he had was from our four-year-old who handed up, held down, supported, fetched or carried nails, clamps, wires and pliers, while I taught locally to supplement our finances.

Next we added two more rooms, some chipboard 'fell off a truck' and we added cupboards, beds and a table. We upholstered some chairs that we found at a dump, bought secondhand water tanks and did our unique style of plumbing which ran to a shower and septic system.

Rooms were divided with curtains, screens were attached and some crudely hewn furniture came into being. Then came the second biggest love of my life. We chanced on an old combustion stove in bits, so we reassembled it and acquired hot water . . . what a luxury!

Our tin house now boasts four bedrooms, two verandahs, one workshop and a huge open area with a fireplace built with stones from our creek. All this is still encased in that dear old ex-poultry shed's sheets of galvanised iron and looking (to us at least) like a million dollars because we owe not any man — thanks to **that** man!

ENERGY WORKSHOPS

Peter van der Wyk will hold some workshops on energy systems at Bodhi Farm this June and July. One will focus on battery care and maintenance.

Further details from Sustainable Lifestyle Education Collective, Bodhi Farm, The Channon, NSW, 2480. Phone: (066) 88 6281.

Bush women

Work & shelter

By Kate Matilda

In *Going bush alone* in *Earth Garden 45,* I described what it is like to be a lone woman in the bush. This time I want to cover the more practical aspects of finding shelter and spinning money. I shall gear it down to those of you who have not been further from the city than the nearest National Park. My apologies to those women who are already familiar with country life.

Okay, so you have broken your lease, sent away for all the back copies of *Earth Garden* and told the boss to find some new terminal fodder:but where do you go from there?

I used to own a Bongo van and would spend weekends bongoing around the country roads, taking the dog, staying in the van, just getting the feel of different areas. If you like a particular place, get detailed maps of the area and explore. Stay a few days, walk around and talk to the local shop people (while buying a few goodies); they are a mine of information.

Wander into the pub on a Saturday afternoon, buy a beer and start chatting with the locals. They will soon ask you who you are and where you are from, so tell them you like the area and start asking them questions about it. Country folk, the old timers, all know each other. I have found that if you are pleasant to them and take your time with them, they will give you all the help and info you need. If they feel threatened by you, you won't get a look into the area.

There are a lot of old houses in the country that are empty. I'm constantly amazed at just how many there are, either on properties or in small rural villages. Some of these are in excellent condition, some only fair, but they can often be rented, or at least discovered, via the store or pub. They will never be advertised otherwise (just remain empty) and the rents asked are usually low. The occasional miser will ask too much, but don't be fooled, you should know rent comparisons from the city. A couple of years ago I found a little place for a friend to rent for just $12.00 a week, just out of a small village. It had power and water and most of the basics and she and her little daughter loved it. That was negotiated at the pub. I think country people are used to doing business that way — comparing wool and lamb prices and so on over a beer.

There are a couple of other avenues for finding shelter. Rural weekly papers, such as *The Land* and *The Weekly Times* often advertise accommodation, quite often in exchange for caretaking or farm work. This magazine and other alternative lifestyle magazines have a lot of accommodation offered, usually a separate cabin or caravan and this is often in exchange for a day's work, taking care of some of the farm chores or helping to make mudbricks, etc. I was once offered a share on a farm in return for being a kind of lady's companion, but I declined the chivalrous offer.

So we come to money. Often the security benefit will be enough, at least initially, as the rents are low and you can grow vegies and barter for eggs from the neighbour in exchange for something that you make. You will find that with the increased time available you will be able to make so many more of these things that are normally bought for an inflated price, such as soap, hand creams, yoghurt, bread, cheese, clothes, floor rugs — the list goes on. Social security doesn't hassle outback as much as in the city either. The staff are usually country born and country folk are slower and less tension-creating than city bureaucrats.

Ask around the farmers, starting with your landowner, if she or he is a farmer, for seasonal work. They will tell you when occasional fruit picking, pea picking, lamb marking, shearing or fencing is on and which needs extra hands. They will show you what to do, too, and its easy, but very fast. It takes a while to break in, but once people have seen you work and if you are okay, they will remember you next time and the word gets passed around. But — and it is a big one — forget eight hour days. Country working days start at 7.30 a.m. and go on till 5.30 p.m., or even later.

I have been doing a bit of roustabout work here over summer, that's helping in the shearing sheds by picking up and throwing the pieces onto the table, skirting the burrs off, sweeping the floor, etc. These are long, fast days, very tiring and dirty but with regular *smoke* breaks and the pay is around $60.00 a day. Of course, women working in the sheds is a new concept to the shearers, but I was accepted with only minor questioning and I know of a few women shearers and wool classers.

There is also the craft industry. If you make a surplus, you could try selling through local craft shops, flea markets, school fetes or the local shop. The returns are not very high for the hours involved, so for most this is just an adjunct to the pension, though it all helps. Growing and selling organic vegies, flowers and herbs is another occupation to try. Again, the returns are not fantastic, but the activity itself is very rewarding. Try selling them through your local health food shop, if town is within easy reach and you can keep up a fresh supply.

Of course if you are really clever (which I am not) you will find a place to live only a short distance out of a large country town so that you have the opportunity to do ordinary full or part time work as well. I live 55 km out of Bathurst, which sounds a fair hike, however it is only 40 minutes to drive, which in the city can be the time it takes to go between three traffic lights.

If you move out and find that it agrees with you, spend a year or so finding your feet on country soil. Get to know the seasons, become familiar with the phases of the moon and relearn the nearly forgotten mysteries of being in touch with Nature before rushing back to the city or roping yourself into a regular job. You will soon realise in what field you should learn new skills so that you can survive and grow as a bush woman.

CRAFT BOOKS

An extensive list of books on **Arts and Craft** (six pages of them!) available by mail is included in *The Book Connection's* Autumn catalogue for 1985. Titles cover subjects like knitting, crochet, embroidery, spinning, weaving, macrame, patchwork, sewing, needlework, basketry, cane furniture, paper making, metalworking, glass, pottery, ceramics, floral, leatherwork, jewellery, toys, dolls, candles, picture framing and calligraphy.

We didn't know there were so many crafts! Wait a minute, there's also batik, mask making, gourd crafts, stencilling, silk screening, boomerangs, lampmaking and, yes, cake decorating. Be crafty — send SAE for the booklist.

The Book Connection,
PO Box 1463, Dubbo, NSW 2830.

RAINFOREST FUND

The Permaculture Institute (Australia) is setting up a fund to purchase threatened rainforest land and give it to a rainforest preservation group for perpetuity, starting with 187 acres of sub-tropical rainforest in NSW. Contributors of donations of $50-$500 pledged to the Institute will receive a certificate showing they have paid for the preservation of a threatened habitat.

Further information from Bill Mollison, *The Permaculture Institute,* PO Box 96 Stanley, Tasmania 7331, or John Seed, *Rainforest Information Centre,* PO Box 868, Lismore, NSW 2480.

RURAL LEARNING

Hamilton Institute of Rural Learning (HIRL) is a non-profit group based on the 200 hectare Hamilton Community Parklands — formerly the town's water catchment area — parts of which are now regenerating as native bushland.

HIRL is planning to become a community learning, activity and tourist centre with craft shops, an artisans' village and a foundry and will offer education courses in crafts, self sufficiency, gardening, farming and home building.

There will be a hall, a monthly craft market, art exhibitions, a nursery with native trees, plants and herbs, permaculture systems, organic gardens and a nature trail. It will also provide employment and training, particularly for young and unemployed people. A worthy project.

Hamilton Institute of Rural Learning,
Hamilton Community Parklands, 333 North Boundary Road, Hamilton, Victoria 3300.

CATALYTIC CONVERTER

Catalytic converters attached to wood stoves and heaters (also kerosene burners), will increase its efficiency, lifting heat output, burning wood more slowly and reducing smoke and creosote.

The Versagrid catalytic converter kit, made by Applied Ceramics, Inc. in Atlanta, Georgia, is now on sale in Australia. Write to Robert Heim at Meihrac, Bridies Lane, Lancefield, Victoria, 3435, for prices and further details.

access

PERMACULTURE DESIGN

The Permaculture design course at Mapleton, listed in our **Tree crops miscellany** in EG45 will now be held June 11-25, 1985. Details from Kim Christie/Max Lindegger, MS 955, Mapleton Falls Farm, Mapleton, Qld 4560.

INNER AWARENESS CENTRE

60 Piper Street, Kyneton, Victoria 3444

The Inner Awareness Centre is run on lines similar to Sydney's *New Awareness Centre,* with workshops on stress management, various philosophies and meditation basics, with books and magazines for sale.

The **Earthtribe Ashram,** on 11 acres between Malmsbury and Daylesford (no electricity or running water, but there's a dam) overlooking Mt Franklin, is offered as a retreat for people who can provide their own food and shelter.

Contact Tony Clarke at the Inner Awareness Centre or at PO Box 55, Malmsbury, Victoria 3446 for further details.

MUDGEE
Small Farm Field Days
July 19-20, 1985

For two days each year the grassy oval of the showground at Mudgee, New South Wales, is dotted with tents and stands and becomes a marketplace of ideas, information and practical demonstrations of skills and equipment for people on the land.

This year the theme revolves around the horticultural question of **What can I grow/** An orchard planted last year with 30 different types of fruit trees is now well established and will be used to demonstrate the selection and care of berry (including blueberry), vine, stone, pome and citrus fruits. The Forestry Commission will have talks and demonstrations on growing trees from seed.

Growing native plants such as waratahs, kangaroo paw and proteas will be covered in the main lecture hall, as will hydroponics, organic growing and the control of woody weeds like blackberries and briars using feral goats.

A farm workshop housed in a huge tent will be used for demonstrations of hand and power tools, small motor maintenance, sharpening knives, scissors and saws, replacing farm tool handles, blacksmith, welding and soldering and rope tying and plaiting.

Mudgee Small Farm Field Days,
PO Box 12, Mudgee, NSW 2850.

TOWN EDGE COMMUNITY

THE PERMACROFT PROPOSAL

By Daryl Sipos

Permacroft members have developed a new and different strategy for setting up an alternative community. Our aim is to buy a large set of 'downtown' buildings within an existing country town and to buy our farm land just outside the town.

Most of our members will live permanently in houses in the town, but many will also be able to gradually build homes on private house sites on the co-operative's land. Most previous attempts to set up communal ventures in Australia have aimed at moving a large group of people directly onto an undeveloped rural property. The energy and funds of such groups has been spent on pioneering work, such as roads, water supply and housing, just to make it possible for people to live there.

Over the last 15 years many groups have tried to set up rural communities. So far very few have developed any large-scale farming ventures and most members are still dependent on paid jobs in the mainstream economy to survive, or they are on the dole.

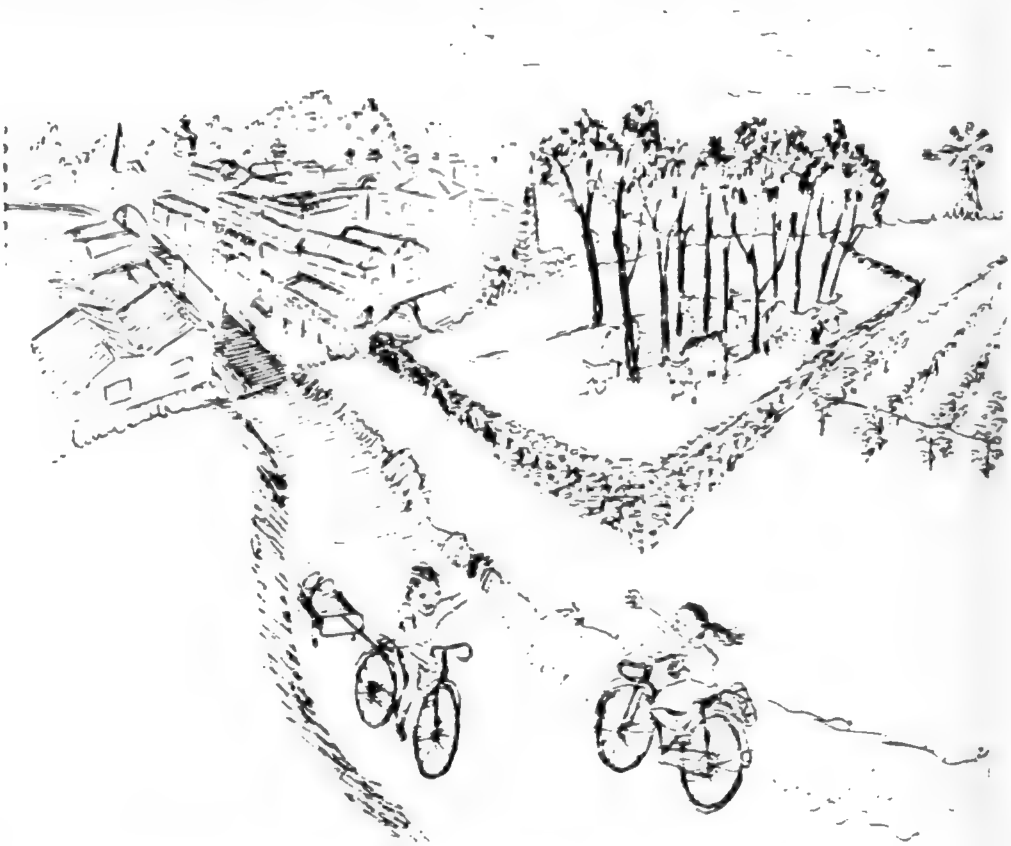
By moving into an existing country town we intend to avoid the difficulties of a pioneering lifestyle. Houses and services are already provided with shops, schools and other facilities close by. Our members' energies and funds will be free for work that will enable us to achieve a satisfying and secure lifestyle by setting up various community services both for ourselves and for the local townspeople.

Many community activities, such as a day care centre, craft workshops, or bulk foods co-op, could be set up in a large set of ex-commercial buildings in the town. We also aim to purchase 150-200 acres of land just outside town, where approximately 30 house sites will be available for fully paid up members of the co-op. Both town and farm dwelling co-op members will be able to develop an organic market garden, a holiday-camp style visitors' centre, fruit orchards, a dairy and other activities on land within an overall permaculture landscape design.

Our choice of a town is Daylesford, Victoria. It is set in the forested hill country about 1 ½ hours drive north-west of Melbourne. It has a population of over 2000 people and was started as a gold mining town. For a while Daylesford also flourished as a hill resort with health spas based on the numerous local mineral springs. However, these days Daylesford has the highest rate of unoccupied housing of any town in Victoria (according to national census figures). Numerous good quality houses are available at very cheap prices.

People who own (or partially own) a house in a capital city will find that a similar quality house in Daylesford is under half the price and often on a larger block of land. Rent in Daylesford will also be much cheaper than city rates for people who can't afford to buy their own house. The co-op will also be setting up some low cost semi-communal accommodation and people will be able to build their own low cost housing on the land.

Many people have attempted to become self-reliant on small farms of their own. These people have often encountered the same problems that private farmers have had to face for decades past, not enough labour for all the farmwork that needs doing, not enough capital and social isolation in the bush. It may be an attractive proposition for many smallholders to sell up, buy a house in Daylesford and



Town edge farming. Illustration by Judy Blythe of Eltham Friends of the Earth.

some shares in Permacroft.

We aim to achieve everything that most organic gardeners want from a farm and as a co-operative we expect to have enough labour and funds to develop our property fairly rapidly once we purchase the land. We also anticipate that our group will develop a positive social atmosphere in the town, through a combination of private home life and co-operative work environment.

Our short-term plan for the future is to find a permanent home for the orchard in the Daylesford area. We intend to purchase 5-20 acres of land before the end of 1985. The block should be right on the edge of Daylesford, so that it will be within easy walking distance of members' homes in the town. The block must be suitable for a market garden to supply our members, local townspeople and for sales of organic vegies to the Melbourne market.

If we aim at a small property first we will be able to start work as a co-operative by the end of 1985 and from this base we will be able to work towards buying our larger properties.

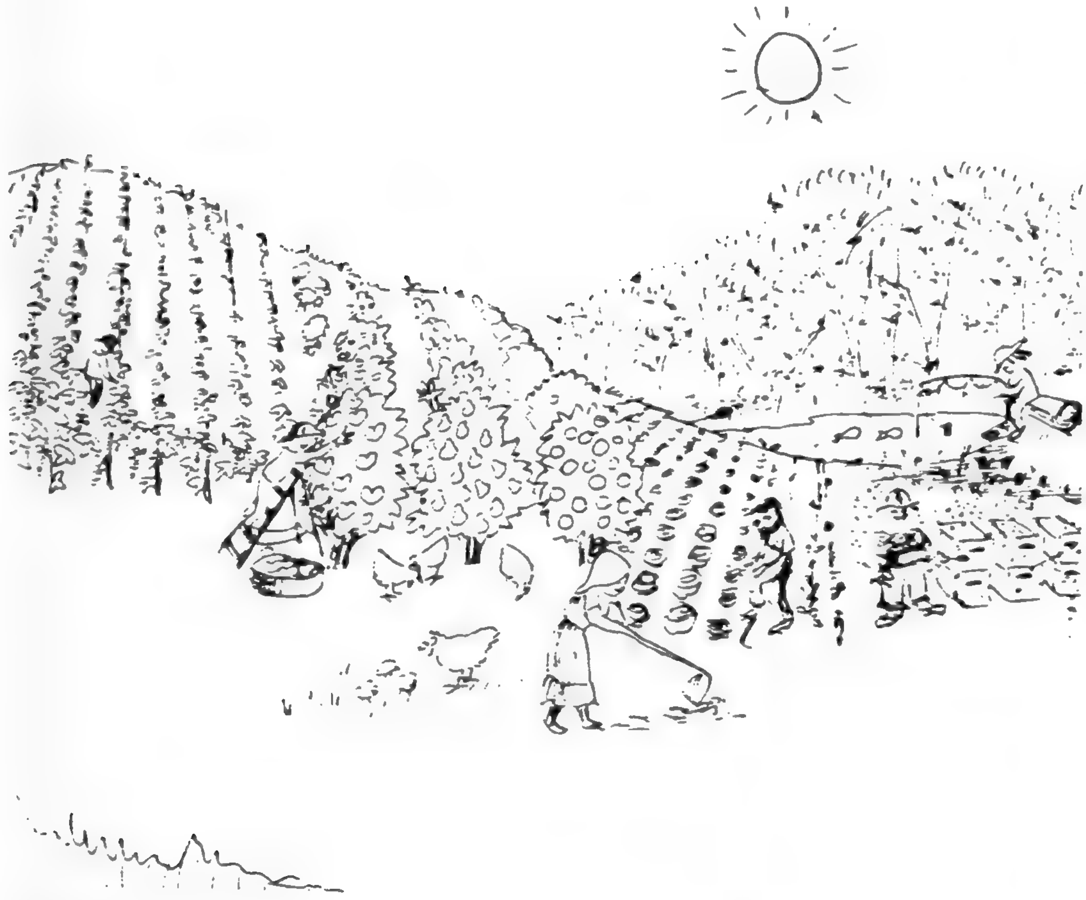
Shares in Permacroft are $3000 per person. This amount can be paid off gradually after a deposit of $360.00. People who have no plans to live permanently in the town or on the land can join as non-resident members for $900.00 cash (no deposits). Shares can be refunded on request until we invest our savings in land. After that refunds will have to come from reselling shares to new members. Shares may be resold for more money than was paid for them, but there are limits on speculation (fortunately). Every member has one casting vote immediately upon paying a deposit regardless of the number of shares purchased.

☐ **Permacroft information.** If you would like more information, write, telephone or call in to our city office at 7A Edwards Street, Brunswick (Melbourne), just off Sydney Road. Phone: (03) 387 0770. Please send $2.00 to cover mailing costs for information, or send $20 ($10 if unemployed) to go on our newsletter mailing list for a year or two.

We share this office with a Recycling Information Centre co-ordinated by one of our members.

Regular members' meetings are held in Melbourne and several public meetings are planned for 1985 in Melbourne and Daylesford.

Daryl Sipos, Chairperson, Permacroft Co-operative Ltd.



VICTORIAN TREE CROPS NURSERY

Permacroft has recently gone into business by amalgamating with the Victorian Tree Crops Nursery, situated at Mount Macedon, about one hour's drive north of Melbourne.

Jason Alexandra, a permaculture landscape design consultant, has been running the nursery for five or six years now, working hard to realise his dream of regenerating the tree cover on Australian farmlands. The nursery sells a wide range of farm trees, specialising in livestock fodder-producing varieties. There is a great incentive in planting trees for the average farmer if the trees can produce high quality stock fodder.

The nursery is open to the public for direct sales and is in the main road to the Mt Macedon Lookout, a few hundred yards past the garage, hotel and shops. A sign will be out the front each weekend.

Most of our trade is by mail order or telephone. We sell a wide range of herbs, native plants, ornamentals and fruit and nut trees (including some rare varieties). A catalogue list is available on request. We hold working bees every second weekend which are a good way for members to get used to working together. It is also a good way for non-members to meet us and find out about things.

Call in at the nursery anytime (from daylight to dark that is!) or contact us at:

☐ **Victorian Tree Crops Nursery.**
C/- PO Mount Macedon,
Victoria, 3441.

PLEASE READ THIS CAREFULLY

These lines may change your life. Many people over the years have found their piece of Australia through our land lines.

Land lines is a free service, restricted to current subscribers to Earth Garden who wish to buy, sell, lease, caretake or seek land. Annual subscription $11.00.

Readers must give their full surname and address. They have the responsibility to thoroughly check all deals. Keep listings to 50 words or less. This is not a lonely hearts column.

We are putting our farm on the market for $110,000. It includes a large weatherboard house with restaurant attached, outside kitchen, dining room and workshop, A-frame studio and garden bedroom. There is a large mixed orchard (fruit and nuts), large herb gardens, 1,000,000 gallon dam and 16 acres of dark brown loam. We are 20 minutes from Bunbury and two hours from Perth in a valley on top of the Darling Range. It is very beautiful and would be a suitable place for communal living.

Nerys Purchon, Prancing Pony Restaurant, 1 Wellington Mills Road, Dardanup, WA, 6236. Phone: (097) 28 3045.

Conservation minded people with a commitment to community living are invited to make inquiries to Bundagen community. Memberships are occassionally available to suitable applicants.

For information, write to: Membership secretary, Bundagen, C/- PO Repton, NSW, 2454.

I am interested in buying land at or near Wonboyn, far south coast of NSW. Share would be considered. Soil must have some farming potential.

If you know anyone who can help, please write to P. Goldin, PO Box 195, Kingsford, NSW, 2032.

land lines

Shares available at Pompenbill in the beautiful Tweed Valley (Murwillumbah 24 mins, ocean 45 mins and views of Mt Warning). Creek frontages, some with timber and rainforest, others with quality grazing land and light timber. Land is owned by a company of which each shareholder is a director. Shareholders have sole rights to their lots. All lots surveyed. Prices $14,000 to $18,000. Size and type of lots vary. Internal access roads and most legals included in cost. Contact Mick Cahill, C/- PO Uki, NSW 2484. Telephone: (066) 79 7184.

For sale: 140 acres, west of Grafton. Very peaceful, with beautiful rainforest gully and many rare species of wildlife. Fronts onto two permanent creeks with some good creek flats and backs onto Nymboida State Forest. Three-quarters fenced. No power, but phone available. Price $35,000.

Maree & Lyall Burgoyne, Cnr Dolby & Old Glen Innes Roads, Buccarumbi, via Grafton, NSW, 2460. Phone: (066) 49 4165.

Would some friendly person(s) like to exchange some of their time and labour for a share of our land near Crescent Head, NSW? There is a comfortable mudbrick cottage, 9m × 4m, which needs some finishing touches. There is ample land, mainly bush, if someone wants to have animals. I need occassional assistance when two hands are not enough. All letters with SAE will be answered.

Reg & Gwen Humphreys, Berangi Road, Crescent Head, via Kempsey, NSW, 2440 Phone: (065) 66 0387.

Moora Moora Co-operative, near Healesville, Victoria, has now been going for 11 years. There is currently an opportunity for a person or family to become part of Moora Moora without the expense or long term commitment of membership. The position of caretaker at our Community Centre has just become vacant and we would like to try filling it from outside the co-op. The caretaker needs to live in the Community Centre (in a self-contained flat). Most members live in their own houses, so we are looking for someone: a single parent with one or two children, a young couple with at most one child, an active retired couple, or perhaps a single person looking for somewhere to belong. The Caretaker needs to be honest, friendly, with a liking for people, organisational ability and skill in making a place feel welcoming.

If you are interested, write for further details to the Membership Committee, Moora Moora Co-operative, PO Box 214, Healesville, Victoria 3777.

Shareholders wanted to live in community being formed on 357 acres in Kangaroo Valley, NSW. Women, children and families encouraged. Shares $14,000 per adult. Outward looking, partially sustaining community envisaged. A multiple occupancy application is being prepared. Also a land management plan is envisaged for protection of the varied features of land, for example rainforest.

Contact Andrew Solomon, 61 Bellevue Street, Glebe, NSW, 2037. Phone: (02) 692 9225, or Trish Kenny, C/- PO Kangaroo Valley, NSW, 2577.

Ideal retreat, 107 acres wildlife refuge (freehold) with 60 acres of magnificent timber and bushland with an abundance of bird and animal life and newly-built rustic style home. Remaining 40 acres tree-studded pasture at present running horses. Long permanent creek frontage, dams and springs. All weather access, northerly aspect. Frost-free slopes. Secluded, but only 40 minutes from Kyogle. This is a genuine private sale, realistically priced to sell quickly at $105,000.

Ring Gary McIntosh (reverse charges) after 6 pm (066) 36 4104 or Sydney (02) 949 2154 to view photos, or write C/- 'Skylight', Roseberry Creek, via Kyogle, NSW, 2474.

We have a 10 acre block of land at Hervey Bay, Queensland with fences all round, dam, power, telephone, sealed road, 10 km from beaches and Pialba. We would let the land to a gentle minded couple or family in return for payment of rates, fencing and slashing and kind care and management, for 7 years or more if mutually agreeable.

Please write with full details to Heidi and Peter Kohler, Stockhornstr. 43, 3700 Spiez-BE, Switzerland CH.

Northern NSW, one tenth share in 500 acres of sub-tropical rainforest bordered on three sides by Mt Warning National Park. Includes clustered mud and timber house, solar panels, generator, over 100 fruit trees, etc. Secluded site with spectacular views. Close to Tweed Heads and coastal beaches. Price $42,000 John & Jennie Wickens, PO Box 512, Murwillumbah, NSW, 2484. Phone: (066) 79 5306.

Dried flowers

By Marilyn Synnes

Dried flowers are an everlasting reminder of those special moments 'said with flowers'.

They are an ideal interior decoration for the busy householder who does not have time to be constantly attending to fresh flowers. Allergy sufferers in hospitals appreciate a bouquet of dried flowers and don't feel 'left out of things' when other patients receive flowers.

The dried flower arrangements sold in florist shops are colourful, eye-catching, attractive — and expensive — so why not make your own? At minimum expense, with very little effort and some patience, you can grow and dry floral arrangements.

The list of flowers suitable for drying is surprisingly long. It includes bluebells, poppies, hollyhocks and sweet william. Many common garden weeds can be dried successfully, but this often involves the use of chemicals and artificial colouring agents.

If you are just beginning, everlasting daisies and statice are good varieties for starters.

Everlasting daisies can be grown from seed simply by following the instructions on the seed packet sold at most garden centres and florists. Be sure to select seed packets which advertise a range of colours, so that you can get pink, cerise, salmon and white.

Two plantings, one in spring and one in autumn, will ensure a regular supply of flowers.

Statice can also be grown from seed as directed on the packet. Alternatively, and cheaper in the long run if you wish to grow a profusion of flowers, they can be grown from bunches of flowers on sale in most larger city markets. Colours are pink, purple, mauve, yellow and cream.

The seeds of the statice flower are found at the base of the bloom. It is possible to plant the whole flower head plus the seed. Remember when planting that statice requires more growing space than everlasting daisies as they are more bushy.

Drying the flowers is very simple and can be begun as soon as the flowers begin to bloom.

The statice are the easiest. They should be tied loosely in bunches and hung upside down in a cool, dry, airy place. Always tie all drying flowers with tape or ribbon, as string or cotton tends to cut into the sap-filled stems.

It is also a good idea to tie the flower bunches in a slip-knot. As the flowers dry the stems shrink. Check regularly to see if the tape needs to be tightened or you could find your flowers falling onto the floor and being damaged in the process.

Drying time varies according to atmospheric conditions, just as growing time varies with the weather. Patience is needed during this period.

The everlastings should be hung in exactly the same way as the statice, but they require an artificial stem. Most florists sell 'florists' wire' at about 45 cents for 10-15 lengths. Using tin snips, cut each length into quarters. Bend a loop into the end of each length. With great care remove the dried stem from the daisies. Very carefully poke the sharp end of the wire into the centre of a daisy head. This requires care and a steady hand. Carefully ease the wire through the head until the hook or loop is firmly gripping the daisy head. Some flowers will fall apart, but with care, patience and caution you will soon have your first dried flowers ready to arrange.

Pussy willow, preferably picked young and of the smallest variety, makes an excellent side shape and colour for an arrangement of everlastings and statice. They may be bought, quite cheaply, by the bunch, already dried from craft and florist shops.

By drying flowers yourself you can make your posies as small or as large as you decide. You can be sure that no other arrangement will be the same as yours.

As success comes your way with everlasting daisies and statice you may feel inclined to experiment further with other types.

From a few small seeds can grow a hobby which can last a lifetime and provide you with your own selection of dried flowers and a sense of personal pride and achievement.

NEWS FROM WWOOF

By Lionel Pollard

Organic Farming Studentships

Willing Workers on Organic Farms (WWOOF), which began in Australia four years ago, has commenced an Organic Farming Studentship (OFS) programme for practical training in organic farming techniques.

It is aimed mainly at the need of the serious student of agriculture. Many degrees and diploma students are required to complete some weeks or months of practical farming work experience as a part of their course.

OFS offers a list of organic farms which are prepared to take students in on a 'work for keep' basis. From this list the student can shortlist two or tree farms he or she would like to visit. By sending a booking form and the fee $20.00 they will be put in touch with the farms chosen to finalise details of the visit.

Because the biggest demand for this type of service comes from overseas, Germany in particular, it was considered that this method of operation would minimise time and money spent in writing to and fro.

WWOOF and the back to the lander

Many of the WWOOF farmers are people who took the plunge and moved on to their own block of land and started to 'do their own thing'. In some cases this was some years ago, but a few are more recent followers of the growing trend towards a simpler lifestyle.

Whether or not it is your hope to make a similar move in the future, a stay with one of our WWOOF farmers could teach you much about the difficulties and the rewards of doing so.

Working farm visits

WWOOF has become well-known around the world in recent years for organising the opportunity for people to visit organic farms for purposes of exercise, learning or socialising. It has proved of immense value to Wwoofers and farmers alike in all these ways.

Many organic farms are small in size and depend heavily on seasonal or casual labour for their work needs. Many are fairly isolated either geographically or socially, in that they feel a bit out of things because of their commitment to a sustainable lifestyle. To such farms the visits of a Wwoofer is like a breath of fresh air!

The basis of such visits is that you donate your labour in exchange for meals, somewhere to sleep or pitch your camp and the chance to learn a bit more about organic growing. The farmer can win in the learning stakes too as many Whoofers are skilled in areas which the farmer may wish to learn about.

How WWOOF works

In Australia we provide a list of the 95 or so farms in our network at a cost of $6.00. Members are then free to contact the farms of their choice to arrange mutually convenient visits. The list contains details regarding accommodation, food, smoking, children, farm type, work needed, etc, so an informed decision can be made.

Farm types range from a large garden of 1¼ acres up to farms of 300-400 acres of mainly grazing land. Most, however, have only a few acres under intensive use for fruit, vegies, poultry, goats, horses, cows, geese, bees or other specialties. The combinations of these seem endless and a wide variety is assured.

Reverence for the soil

Perhaps an understanding of the needs of the planet's skin, a love and reverence for the soil, is the main philosophical difference between the organic and the chemical dependent farmer. It seems to the writer that most people with this attitude to the world we live in tend to spread it into other areas of life and in particular to the ways in which we see, respond to and behave towards our fellow man.

Whatever the truth of these conjectures, the fact is that WWOOF has operated for 12 years, since its first appearance, with a minimum of rules and with an absolute minimum of problems. We tend to put great stress on expecting members to remember the golden rule and it seems to work.

If you feel that you have or can develop these sorts of attitudes, why not consider becoming a part of the network, either as a worker or a farmer?

☐ **WWOOF (Australia).** Contact Lionel Pollard, 7 Duncan Avenue, Boronia, Victoria, 3155, Australia for a brochure, mentioning your interest.

Wwoofing around the world

There are some 16 WWOOF or similar organisations around the world. As they are still all autonomous bodies, they tend to have slightly differing ways of achieving their similar aims. If you are travelling to Europe, North America, or New Zealand, you could do a lot worse than make contact with and use networks as a way of travelling cheaply and getting closer to the people than the average tourist will ever do.

Each of the groups listed below is an independent, autonomous group with its own membership system, fees and rules and with its own method of operation. All have in common the general aim of helping the organic movement to grow by providing the opportunity to learn by experience in a "hands on" situation. The farm apprenticeship schemes offer a longer-term (1-6 months) learning situation aimed mainly at students.

WWOOF schemes.

WWOOF (UK), Don Pynches, 19 Bradford Road, Lewes, BN17 1RB, Sussex, UK.

WWOOF (NZ), Tony West, 188 Collingwood Street, Nelson, New Zealand.

WWOOF (Eire), Gill Wenloch, Carrigliegh, Shanballymore, Mallow, Co. Cork, Eire.

Natur et Progres Listes des Stages, 53 Rue de Vaugirord, 75006 Paris, France.

Integral, Alvares Altes, Paseo Maragall 371, Barcelona 32, Spain.

WWOOF Maratimes, Meadows Brook, RR1, South Brookfield, Queens County, BOT 1XO, Canada.

USA groups.

WWOOF (Cal), 13201 Harding, Sylmar, California 91342.

WWOOF (NW), Neal Bittner, 3231, Hillside Road, Deming, Washington 98244.

NEWOOF, C/- NESFI, PO Box 937, Belchertown, Maryland 01007.

MAWOOF, Jeanne Nye, 1601 Lakeside Avenue, 607 Richmond, Virginia 23228.

Tilth Working Weekends, 4922 Goings Street, Portland, Oregon 97218.

Farm Apprenticeship Schemes.

National Farmers Co-Op, FAP, Birdsfoot Farm, Star Route Box 138, Canton, New York 13617.

Maine OFGA, FAP, Box 2176, Augusta, Maine 04330.

South Org App Prog, Utopia Garden Centre, Box 45-OG, Utopia, Texas 7884.

CLFA FAP, Candice Galik, Annabel Taylor Hall, Ithaca, New York 14853.

Tilth Placement Service, 357 1432 1st Street, Arlington, Virginia 98223.

WWOOF UK Training Scheme, Gatehouse, Meeting Hill Rd, North Walsham, Norfolk, NR28 9RV, UK.

If you are planning a world trip, why not join the WWOOF network where it suits your plans? If you are not planning a trip, why not leave this list somewhere (a hotel or youth hostel notice board for instance) where others may see it?

Gentle obsessions

COMPUTERS

Dear Irene & Keith,

Enough! Enough! We can tolerate a personal obsession creeping into a self-edited magazine, but twice in two issues!

Computers are an accepted part of agribusiness farm life. So are giant 8-wheel tractors, mechanical harvesters and broadline cultivators. We thought **Earth Garden** espoused different ideals.

A contributing force behind our further retreat from 'civilisation' was the increasing preoccupation of our city friends with computers. Hence our dismay at being pressured with this inappropriate technology in the acknowledged standard-bearer of the 'flight from the city'.

There is a comprehensive collection of magazines devoted to computers in any newsagent, readily available to those who are interested. It is depressing therefore to see two pages of what amounts to software advertising, which could have carried the sort of articles EG is known and loved for.

Yours sincerely.

Penelope and David Lea, 'Brush Box Creek', Taylors Arm, NSW.

Dear Penelope, David and Earth People.

Thank you for your letter and your concern. We seek and need our readers' comments and guidance on the subjects we cover in **Earth Garden** and on the direction they think our magazine should take. It was smart, but not wise, to launch into computers and we have now decided to drop this section.

Without obsessions, of course, we would't have started **Earth Garden** or persisted in spending the past 13 years of our lives working hard to put it together regularly each quarter. We created it with a few obsessions in mind, primarily that the world would be a better place if people were more self-reliant and lived in harmony with their environment. We have often found it difficult to walk the thin line and choose a commonsense view between the extremes of machine breakers and machine worshippers, vegetarians and meat-eaters, athiests and spiritualists. Our solution has been to stick to practical, feet-on-the-ground subjects and the first hand experiences of our readers.

Of course as editors and publishers we retain the right to run stories on any subject we think is appropriate to our readers. Let's regard computers as a hiccup in the flow of EG history!

We've hade some flack also on our articles on travel and energy (and have even been accused of being 'trendy' for the first time in a decade!) We'll sign off by saying that renewable energy as a subject will remain a gentle obsession in **Earth Garden**. It is crucial to all our futures and to the future of Australia. After earth building, it has produced the most positive comment and feedback from readers that we've had.

Peace and love, Irene and Keith.

CORRECTIONS

Quite a few mistakes crept into the text of **Earth Garden 45,** especially in David Dumaresq and Jackie French's article **Water lifting water** on page 21. Our apologies to them both.

The question in the first paragraph should read: "How can it pump water when it's out of the creek?" In their story **Go with the flow** on page 22 the third paragraph should read "having bleed points — cheap gate valves — every 500 metres . . ." (not every 50 metres) while in the fourth paragraph it should be ". . . about 2,600 litres a day . . ." (not 260 litres a day).

In both of Peter van der Wyk's articles dealing with voltage adapters (pages 34 and 43) we misread the list of voltages. These should be 3, 4.5 (4½), 6, 7.5 (7½) and 9V. Peter comments: "If 5V is needed, you could make up a voltage converter using a 5V power supply transistor. These can be purchased to deal with as much as 5 amps."

The algae pond

Rene Schneerberger is a Swiss citizen who is a specialist in growing algae for animal feed currently working as a low technology consultant in the Phillipines, where he teaches small farmers to grow and use algae and to build bio-gas digesters. He believes algae could be grown as a feed supplement in remote parts of Australia during the dry season — wherever there is enough water from a creek and plenty of sunlight.

GROWING CHLORELLA FOR STOCK FEED

By Rene Schneerberger, Mindanao, Phillipines

Chlorella is a high protein animal feed which can be grown under almost any conditions.

Handbook No. 8 of the United States Ministry of Agriculture says that chlorella is better as a high protein feed than soy bean meal and spinach together. Believe it or not, 100 grams of dried chlorella powder contains 55.6 grams of protein! There is only one plant with a higher protein and that is **spirulina.**

I can hear readers asking "What is this guy talking about?" Most of you have probably never heard about chlorella or spirulina. I guess the best thing to to is to start right at the beginning. I will try not to be too scientific, but sometimes it just can't be avoided, especially if the information is to be accurate.

Chlorella is a species of edible micro-algae, so small that they cannot be seen by the naked eye. Their shape is spherical and they are about three microns in diameter (1 micron = 1/1000 of 1 mm), so it takes about 330 cells of adult chlorella to form a chain 1 mm long. Chlorella propagate by cell division and the cell division is better the more sunlight they get. They divide by photosynthesis, each mother cell giving birth to several baby cells. There can be as many as 16 or 32 baby cells from one mother cell. This reproduction rate makes chlorella one of the most productive plants in the world.

Here in the Phillipines a lot of rice is grown. Let us make a simple calculation. The daily required amount (DRA) of protein per person per day is 60g according to the Food and Agriculture Organisation (FAO) standard. To grow this amount of protein one needs about 100 square feet of water pond. To grow the same amount of protein in a rice field requires more than 8000 square feet of land. Even if you grow soybeans, which are considered a high protein feed, the land area needed to grow 600g of protein is 2400 square feet. Obviously, algae is much more productive than any other plant known to science.

Since I have compared the growth rate of chlorella and soybeans, let us also compare the nutrient values. I.U. = International Units.

Chlorella powder (100g)

Vitamin A	100,330 IU
Vitamin C	59.6 mg
Niacin	240.0 mg
Calcium	2940 mg
Phosphorous	29000 mg
Iron	570.0 mg
Carbohydrate	15 g
Protein	55.6 g
Fats	13.3 g

Soybean flour (100g)

Vitamin A	121 IU
Vitamin C	nil
Niacin	2.3 mg
Calcium	218 mg
Phosphorus	613 mg
Iron	8.8 mg
Carbohydrate	33.0 g
Protein	39.0 g
Fats	22.0 g

The result is very clear. Soybean flour is only richer in carbohydrates and fats and these are the ingredients we do not like to see in animal feeds. Chlorella also contains all the essential and non-essential amino acids and is rich in vitamins.

Looking at the facts it is surprising that people are not making use of this cheap and easy to grow fodder source. I believe I know the reason why. There is a mental block against feeding animals with a plant that cannot even be seen with the naked eye. When I talk to people about algae for the first time, the usual question is: "What does it look like?" If I tell them that they will have to use a microscope to see chlorella, they begin to doubt whether or not I have a normal state of mind. Well, you can be sure that I have and I really know what I am talking about. I have been growing algae all over the world and have even fed people with chlorella in starvation areas.

A major reason that more big companies are not producing algae on a large scale is because there are few experts around who really know how to grow it commercially. I am one of them and I can grow algae in a backyard or in a 10 hectare pond.

To grow algae on a small scale is not at all difficult. It is simpler than growing tomatoes in a garden and there is much less work involved. Believe me it is really worth trying.

You can't feed algae to your animals unless you first grow it yourself.

This is how it is done. The procedure is very simple as long as the production is only on a small scale, let's say for about 10 pigs or 200 chickens. If it is to be done on a larger scale, you must have some experience at small scale growing and know something about water management.

The first requirement for growing chlorella is a pond. This pond should not be deeper than 25cm level as a maximum. Sunlight cannot penetrate deeper into the water and below that level no photosynthesis can take place. The pond may be a simple hole in the ground as long as it is watertight; it is not important what material used to make it. The shape of the pond is not important either, I suggest it should be rectangular or round.

The maximum size for a small scale pond is 20 square metres, but it is amazing how much chlorella can be grown in a pond of this size if it is properly maintained.

The pond should be sited in a sunny place. The more sunlight that comes into the water, the better the algae will grow and multiply.

Like all plants, algae must be fertilised if they are expected to grow. The best possible fertiliser is chicken or pig manure. About 3 per cent of predigested pig or chicken manure is added to the water. The manure is predigested by mixing manure with water until it is practically dissolved. About one third of the water used to dissolve the manure should be mixed with about 50 per cent cows milk to add lactic acid or lactobacteria to the water. This speeds up the predigestion of the manure.

Let the mixture stand in sunlight for about three or four days, then put it into the pond, at the same time filling the pond with water. I prefer a water level of not more than 15cm, so it is simple to calculate how much dissolved manure has to be put into the pond. For 1 square metre with a water level of 15cm this would be about 3½-4 litres of dissolved manure. When a pond is first fertilised the percentage may be increased to 5-6 per cent. Later on, when only new fertiliser needs to be added to feed the algae, you should not use more than 3 per cent.

Let the water stabilise for two days, then add the starter. After that nature will do the rest. All you need do is to stir the water two or three times a day to get CO_2 into the water and the reproduction will start at once. Under good conditions, with plenty of sunlight, the first harvest can be expected after five or six days.

Now we come to a small problem. How does a beginner know when the algae are ready for harvesting? You cannot see the algae, so how can you judge whether or not they are ripe? There is a simple method. Once the starter is put into the water, the colour of the water will change within one or two days. First it will become light green, that means the chlorella have started to reproduce but are still juvenile. One day the water will be a medium green colour. At this stage the chlorella are adult but not yet ripe. During the third day the water will become dark green, which means that the algae are getting ripe and in the fourth day they are ready for feeding.

The next problem will be how to feed the ripe chlorella to your animals? Well, there are different methods. The best and easiest is to let the animals drink the water, including the chlorella, from the pond. This is very effective as a supplement to commercial feeds and the difference can be seen quite soon.

There are also ways to harvest chlorella and dry the algae to keep in store for emergencies, such as when the weather is bad or when a drought prevents the grass from growing normally.

Quite a lot more could be said about this kind of high protein stock feed, but this cannot be done in a short article. If anyone is interested in hearing more about it, they are welcome to write directly to me and I will answer any questions. There will be no charge for this (but we suggest you enclose an international reply paid coupon or money to cover return postage to Australia — Irene & Keith).

Let me give you some ideas on what can be done with the chlorella you produce in your pond.

With a 1 acre pond you can grow enough chlorella to feed:

- 77,440 chickens with 1 oz of chlorella powder per day,or
- 1,600 pigs by giving them 3lbs of chlorella per day, or
- 1,000 cows by giving them 5lbs of chlorella daily.

I know that these figures will seem incredible to someone who has never heard about chlorella before this, but please belive me. It is really true and I can prove this statement any time. But as I mentioned before, this is only possible if an experienced person who has sufficient basic knowledge in water management and hydrobiology is available. Without this basic knowledge it is hopeless to try to do it on a large scale, because you would be bound to fail.

If someone is interested in raising algae on a large scale I would consider coming to Australia to introduce the system. Chlorella is useful for poultry, pigs, cattle and especially for the production of fish and shrimp. In a fish pond chlorella is a very good aerator because they use up the CO_2 in the water and convert it into oxygen.

Rene Schneerberger, 028 Sudapin Crossing, Kidapawan, North Cotabato, Mindanao, Phillipines.

more letters

Dear Keith & Irene,

Thanks to **EG** we heard about Australian Himalayan Expeditions (AHE) and enjoyed a super holiday in India and Nepal late last year. We can recommend them.

Jane Borg, Gladstone, Queensland.

Dear Friends,

I am currently renting a house in Snake Valley, just out of Ballarat and not far from my block of land which is 20 acres of State Forest. I will soon be building a mudbrick house and am looking for someone to share and rent and, if interested, gain some work experience in brick making or any other 'farm' chore they care to lend a hand in. Rent is $20. I have a dog, the start of a vegie garden and horses to come. If you're looking for somewhere to live and would like to make a break from the big smoke, give me a call or drop a note.

Tori Ball, C/- PO Snake Valley, Victoria, 3351. Telephone: (053) 44 9314.

Dear Earth Gardeners,

Please rush me two copies of **HARD TIMES HANDBOOK.** I am broke and so is my friend. I am especially interested in good shampoo and conditioner recipes, as these things are such a rip-off to buy. I love your magazine. I have just bought some land with the intention of building in mudbrick. The articles and nifty hints are an inspiration. It's good to know there are some 'wholemeal' people around! Keep up the good work.

Siobhan Collie, South Caulfield, Victoria.

Dear Siobhan — No sooner said than done! Ron Haines reveals his formulas for healthy herbal shampoo and conditioners elsewhere in this issue — Irene & Keith.

Dear Irene and Keith,

Have just finished reading a friend's back copies of **Earth Garden** from 1975, terrific and cannot understand why folk can watch TV when there are these wonderful magazines around — they are so uplifting, informative and dashed annoying. Now I want a windmill!!

Thought you might like the following by **Meher Baba**:

"To penetrate into the essence of all being and significance and to release the fragrance of that inner attainment for the guidance and benefit of others, by expressing in the world of forms, truth, love, purity and beauty — this is the sole game which has any intrinsic and absolute worth. All other happenings, incidents and attainments can, in themselves, have no lasting importance. Don't worry, be happy — all is illusion."

Are there any EG readers in Nambour/Maroochydore/Woombye/Palmwoods that I could contact?

Thank you a million times.

Love and harmony, **Jenny Law, 29 Upper Rosemount Road, Nambour, Qld 4560.**

Dear Earth Gardeners,

I enjoy reading your magazine greatly, as where I live comics are about all you can buy in the shops. My husband and I live with an Aboriginal community, 240 km from Halls Creek in Western Australia, on the edge of the desert. We have two bores and plenty of soakwater and hope to grow vegies one day. The Aboriginies already have some vegies growing and it's lovely to see watermelons and gooseberries growing wild around the bores!

Our 'family' consists of one white, deaf cat and a young kangaroo. We have 'fostered out' three bush turkeys and one baby emu to good homes. We are always looking after some baby animal or other, so life is never quiet around here. Good luck in 1985.

Yours truly, C. A. Graham, Halls Creek, WA.

The bright white light

Incandescent lights

The standard electric light globes we use in our homes today work on the basis of heating a metal conductor to such a degree that it gives off white light, a very wasteful process.

The metal is a thin filament of tungsten which acts as a conductor of electricity inside the glass globe which contains either a vacuum or a thin atmosphere of argon and nitrogen. Heat is produced because the filament resists the movement of electrons. The hotter the filament, the whiter the light. Because they put out so much more heat than light, the globe becomes hot enough to burn your skin.

Incandescent lights have an efficiency of about 5 per cent and waste, as unused heat, 95 per cent of the electrical energy supplied. The white hot metal emits atoms as well as heat, so the filament becomes thinner as time passes, until it eventually breaks.

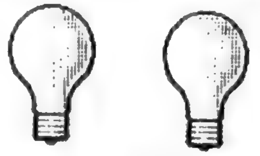
Incandescent 6v and 12v light globes are readily available at car, boat, campervan or caravan spare parts suppliers. A 30 watt (W) globe is sufficient for a reading lamp or spot 'task' lighting while a 75W globe will do for general room lighting. You can solder wires directly to the base of low voltage bulbs, or arrange them in clusters.

Flourescent lights

Flourescent lamps or tubes are usually filled with argon and a small drop of mercury vapour under reduced pressure with a flourescent or phosphor coating inside. When the lamp is turned on, an electrical discharge occurs in the gas. The mercury vapour emits strong ultra-violet light (normally invisible), which is absorbed by the phosphor and re-emitted as visible white light.

Flourescent lights are more efficient (about 20 per cent) than incandescent ones, so they use about one quarter of the power for the same amount of light (measured in lumens). A typical 40W flourescent lamp gives about the same light output as a 100W incandescent light. Flourescents do not depend on the heating effect to function, though a high voltage produced in a coil, known as the ballast, is used to start a current passing through the tube.

There are the new, softer 240W flourescent 'warm white' lights like the Philips with an output of around 60 lumens per watt and bright sodium vapour street lights which have an output of 150 lumens per watt. Initial cost and lifespan is comparable, but the Philips lights will last longer. The newer high efficiency flourescents no longer give out a harsh or flickering light as their flicker rate is actually much higher than a normal bulb, but they may cause static in radios or TV sets.



Every billionth of a second 3 billion free electrons flow through the filament of an incandescent light bulb when it is switched on.

Current passing through the filament raises its temperature to about 2300°C.

Flourescent lights and tubes designed to operate on DC of 12v and 24v are available in 8W, 13W and 20W. A high efficency 12V DC 24W gives about 2000 lumens, about the same as a 100W bulb.

To sum up: Flourescent lights are more efficient (giving off five times the light) cheaper to run (don't draw too much power) and longer lasting (10 times as long some say) than incandescent lights on both high and low voltages. This is why they are supplied with solar electric lighting kits.

Arc lamps

The first electric light, the arc lamp, had two carbon rods (electrodes) with a large current passing through them, slightly separated, so that a spark of light jumped between them. The result was an arc of intense white light, but also great heat. Apart from their use as searchlights, arc-lamps are history now, though modern metal vapour lamps and arc-welding are based on this old principle.

SAFETY WARNING

This warning may save your life.

We agree with Michael Hancock's remarks. We believe it is essential that all 240V and low voltage wiring circuits be kept completely separate from one another. All 240V wiring from inverters or generators and in the home must be done by a qualified electrician — Irene & Keith.

Dear Irene & Keith,

I enjoy reading your magazine and gain a lot of inspiration and useful information from it. I would like, however, to warn readers of a potentially lethal practice which was given encouragement in Peter van der Wyk's otherwise useful article **Low voltage appliances** in **Earth Garden 45**, pages 33 and 34.

The practice in question is that of using three pin mains 240V style plugs and sockets for anything other than for what it was designed. That is to say, **never** use them for low voltage wiring, such as 12V etc, as was suggested. The problem arises, not so much when other 240V appliances are accidentally plugged into your 12V system (it would probably just sit there and do nothing), but when your 12V equipment, extension leads, caravan or whatever is plugged into a conventional 240V outlet — **death!**

I am sorry to be so alarmist, but people don't often take notice of warning signs or verbal instructions. The two systems are not compatible, so don't make them appear to be so. You will only be playing a form of Russian roulette until the deadly combination occurs.

Plugs and sockets designed for the job are available on the market at no greater expense, made by the same companies which make the 240V outlets. These usually have only two pins, which makes it impossible to plug them into the three pin system.

Go to an electrical wholesaler (look in the Telecom yellow pages), tell them your requirements and ask if you can have a catalogue, or write directly to the manufacturer. Please, we need all the **Earth Garden** people we can get in this world. Let's not lose some through stupid, avoidable accidents.

Regards, Michael Hancock, Sheffield, Tasmania.

The bright white electric light is the most visible and widespread benefit of the mass distribution of electricity throughout the industrialised countries of the world today, yet it is only 105 years since the incandescent light bulb was perfected by the American genius Thomas Alva Edison.

This brief history of the invention and distribution of electric lighting puts into perspective how much — and how quickly — people's lives were changed by electrical energy.

☐ 1808 — The English chemist, Sir Humphry Davy, inventer of the miners' safety lamp, demonstrated the electric arc lamp, using a 2000 cell battery to send a powerful electric current across the gap between two carbon points.

☐ 1831 — Michael Faraday, who had been Davy's laboratory assistant, discovered the principle of electromagnetic induction. He built a simple electric generator in which a coil of wire moved across the lines of force between two magnets caused an electric current to flow through the coil.

☐ 1862 — First commercial use of arc lighting in a lighthouse at Dungeness, England.

☐ 1863 — Part of Sydney was lit up on the night of June 11 by an arc lamp at Observatory Hill, in honour of the marriage of the Prince of Wales.

☐ 1866 — In Germany, Werner von Siemens built the first dynamo, an electric generator which used electromagnets energised by the current from a spinning coil.

☐ 1867 — The first record of electric lights in Melbourne, during a visit by the Duke of Edinburgh.

☐ 1878 — Sir Henry Parkes authorised the use of electric arc lighting to allow work by night on the Exhibition Building in Sydney.

In February, 1878, Joseph Wilson Swan, a chemist at Newcastle-upon-Tyne, invented the first glass sealed incandescent lamp using a cotton carbon filament.

Using a dynamo he had perfected, C. F. Brush illuminated Wanamaker's Store in Philadelphia using arc light in parallel.

The first street lighting in the world was installed in the **Avenue de l'Opera** in Paris.

☐ 1879 — In August, arc lights lit up the Melbourne Cricket Ground for a night football match.

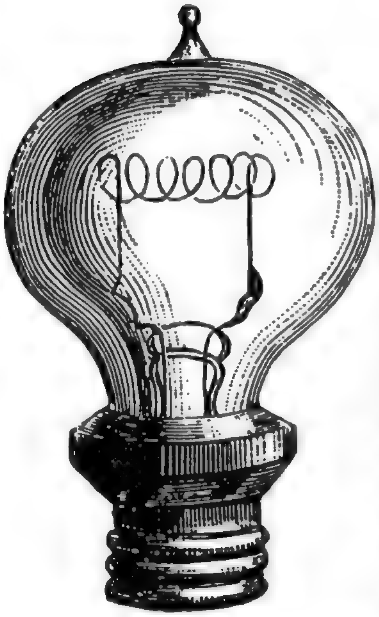
In October, the American inventer Thomas Alva Edison, then aged 32, developed a cotton carbon filament incandescent light bulb which glowed for 45 hours at his laboratory in Menlo Park, New Jersey. He perfected the light in December using Japanese bamboo to make the carbon, which burned for 600 hours. The Edison Electric Light Company was set up and gas company shares crashed.

In September, the California Electric Light Co used two generators to supply 22 arc lamps with electricity, the first time electricity was generated for sale.

☐ 1880 — Edison installed a self-contained electric lighting plant on the **SS Columbia,** with steam engines, dynamos and 115 incandescent lamps. The steamship left New York in May, sailed round Cape Horn and reached San Francisco, brilliantly lighted.

The Victorian Electric Light Co was formed with a contract to light Melbourne's Eastern Market with six arc lamps on the site of the present Southern Cross Hotel. The company was taken over by the Australian Electric Company the next year.

☐ 1881 — First public supply of electric street lighting in Godalming, England, was powered by hydro-electric generation from the River Wey.



An early type of Edison carbon filament incandescent lamp. The raised tip at the top is where air has been evacuated from the globe. "The lamps are about four inches long, small and delicate, and comely enough for use in any apartment," wrote a visitor to Edison's laboratories at Menlo Park, New Jersey. "The current is turned on and off by pressing a button."

In June, The British House of Commons at Westminster was lit by incandescent electric lights.

☐ 1882 — In January, the world's first commercial power station for incandescent lighting commenced in London.

In the same month, Sydney Arcade (demolished in 1955) was lit by arc lights.

In New York, on September 4, 1882, Edison Electric used steam dynamos to supply 110 volt direct current (DC) electricity to customers through underground cables from its Pearl Street power station, to light 400 incandescent electric bulbs.

On June 15, 1882, Redfern Railway Terminal (now Central Station) became the first place in Sydney to be permanently lit by electric light, with power generated in a small power station in Regent Street.

In Brisbane eight arc lamps were switched on between Eagle Street and the Victoria Bridge during State celebrations.

☐ 1883 — Fifty incandescent lamps were installed at the Government Printing Office in Brisbane.

☐ 1884 — Lord Kelvin, British mathematician and scientist, installed incandescent electric lights at Peterholme College, Cambridge.

☐ 1888 — On November 9, Tamworth in New South Wales became the first Australian town to have electric street lighting.

☐ 1892 — The first hydro-electric generator in Australia, on the South Esk River, supplied Launceston City Council with electricity.

☐ 1893 — The first hydro-electric power in mainland Australia, from a waterwheel driven by the flow from an artesian bore, supplied Thargomindah in western Queensland. It was not replaced until 1951, when a diesel plant was installed.

☐ 1894 — On March 7, city streets in Melbourne were lit by electricity supplied by the Melbourne City Council from its generating station in Spencer Street.

☐ 1895 — Westinghouse and General Electric jointly set up a hydro-electric plant at Niagara Falls to generate alternating current (AC) power to run the lights and streetcars (electric trams) of Buffalo, 26 miles away. Both companies used AC devices patented by the Serbian-American inventor Nikola Tesla.

☐ 1897 — The Brisbane Tramway Co built a powerhouse in Countess Street.

☐ 1899 — On December 8, Ultimo Power Station in Sydney commenced generation to supply the electric tramway service.

By 1891, Tamworth, Young, Penrith, Moss Vale and Broken Hill in New South Wales and Nhill in Victoria all had electric street lights. Electricity was first available to the public in Australia in these years: 1880 — Melbourne, 1883 — Brisbane and Adelaide, 1891 — Perth, 1892 — Sydney and 1893 — Hobart.

NEON AND FLUORESCENT LIGHTS

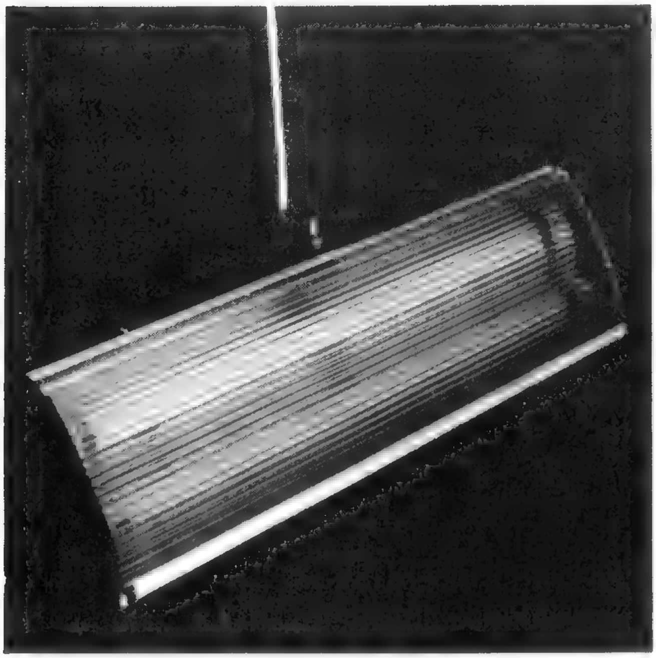
☐ 1905 — Metallised carbon filament lamp developed.

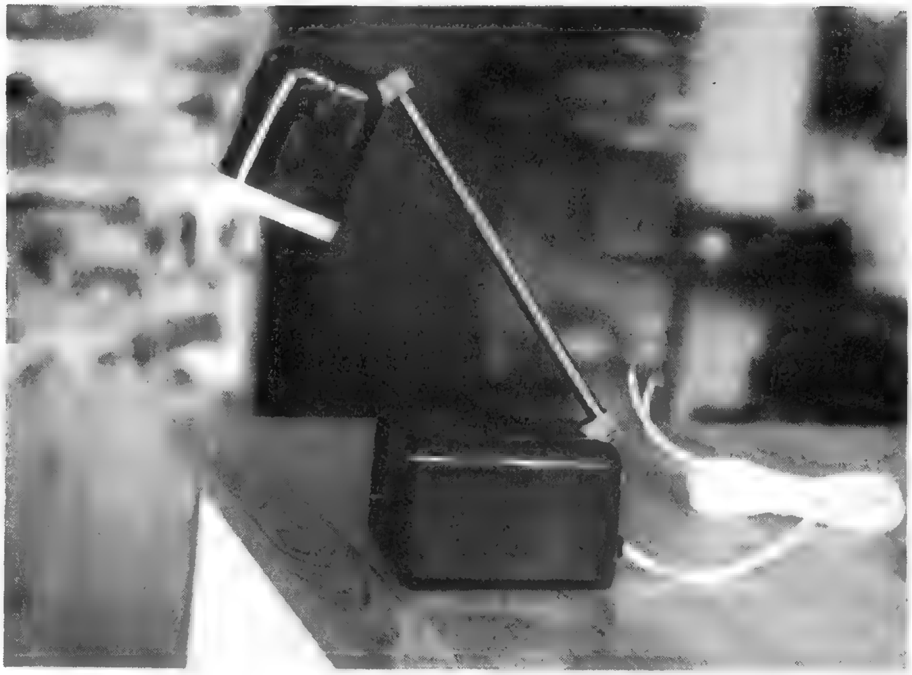
☐ 1906 — Tantalum filament lamp was developed with an ouput of light per watt, four times brighter than Edison's 1880 carbon filament lamp.

☐ 1910 — The first drawn tungsten lamp was perfected. It had a light output of 10 lumens per watt compared with 1.4 lumens per watt of Edison's original lamp. In the same year, Georges Claude experimented with electric discharge tubes filled with neon gas, which gave out a red light.

☐ 1929 — First exhibition of neon lights in Sydney.

☐ 1932 — Sodium vapour lamp (yellow) and mercury vapour lamp (violet, green, yellow) introduced, mainly for street lighting.





Low voltage lights. Top left: This weatherproof outdoor 12V twin tube 8W fluorescent light is amber coloured so it won't attract insects. Price around $55.00, from Amtex Electronics, Fairfield, NSW. Top right: Quartz halogen worklamp 12V/55W, around $32.00 and below: Desklamp, 12V or 24V, around $20.00, both from Solar Charge Pty Ltd, Gardenvale, Victoria.

low voltage lighting

By Jim Kuswadi of Amtex Electronics

Light is the most basic need for electricity. Fortunately for alternative energy users this basic need does not consume too much energy. However, efficiency is naturally still important, so here are a few thoughts on lighting.

Incandescent lights

This is the most common and cheapest lamp. It uses a tungsten filament which glows when heated by an electric current. Osram makes normal size globes for 12V DC operation. Smaller globes are made for the automotive, caravan and yachting market.

Advantages: Low cost, easily obtainable, nice 'warm' colour.

Disadvantages: Low efficiency (15-25 lumens per W), relatively short life (about 1,000 hours, depending on wattage and housing design).

Fluorescent lights

Fluorescent lights are popular with alternative energy users due to their higher efficiency. In 12V DC they are available in 6W, 8W, 13W and 20W sizes. The actual tubes used are the same as those for 240V mains units. The difference is in the ballast/starter and for low voltage application an electronic version is used.

Some people feel that the colour of fluorescents is unacceptable. 'Warm' coloured tubes are now available which produce a warm light.

The flicker of a 240V unit which annoys some people is absent in the newer DC fluorescent lights. The reason for the flicker at 240V is the 50 Hertz current (the current cycles or changes direction 100 times per second). In a DC unit, the output is stepped up to a much higher frequency, of the order of 20,000 Hz, which is far too fast for the human eye to detect.

Advantages: Higher efficiency (about 30-50 lumens/W), much longer life.

Disadvantages: Some types emit interference which can be picked up by radios; colour of the light.

Metal vapour lamps

New technology has produced metal vapour lamps, for example, mercury vapour, high pressure sodium and low pressure sodium lamps. All these have a small arc tube within a larger glass housing. The tube contains a mixture of gases and a tiny bit of metal. For the lamp to operate, an arc must be struck between the two electrodes in the tube.

As in fluorescent lamps, a ballast is used in the 240V AC version and an electronic circuit for the low voltage DC version. Efficiency in these new technology lamps is high: mercury vapour 30-60 lumens/W; high pressure sodium 63-140 lumens/W; low pressure sodium 100-183 lumens/W. A 12V/20W low pressure sodium 50X lamp for outdoor use has just come onto the market.

Advantages: Very high efficiency.

Disadvantages: Colour is either bluish (mercury vapour) or monochrome yellow (sodium vapour). A warm-up time of 3-7 minutes is required to reach full brightness.

"New lamps for old!"
Cartoon from *Punch*, December, 24, 1881.

The Edison Electric Lighting System

A party of between 50 and 60 gentlemen were entertained at an excellent dinner, at Aarons' Exchange Hotel, last evening, by Major S. Flood Page, the general manager of Edison's Indian and Colonial Electric Company.

(Among the guests were the Postmaster General, the Superintendent of Telegraphs, the Secretary for the Railways and the Colonial Architect.)

The room was lighted by the Edison incandescent electric lights. These lights are similar to those which have been used successfully in *The Sydney Morning Herald* office for some time past. There were 36 eight-candle lamps placed (principally for ornamental purposes) round the great mirror at the end of the hall; 14 eight-candle lamps placed in standards on the tables; 10 16-candle lamps in the chandelier in the centre of the room, and 20 16-candle lamps suspended from brackets round the room.

The combined light of these lamps was, of course, too brilliant for the hall, and the full power was displayed only at intervals during the evening. About 30 lamps were found sufficient to give all the illumination required. The light from these was much brighter and clearer than when the room is ordinarily lighted by gas, and the atmosphere was remarkably cooler. The light was clear, soft, bright, absolutely devoid of flicker, and free from that unpleasant bluish glare which renders the arc light objectionable to many people.

The Sydney Morning Herald,
Friday, December 8, 1882

Lights in the bush

By Philip Nicholas

Our solar electric system in the bush in north-west Tasmania is currently powered by two Solarex X100GT panels.

The panels are mounted on the north facing wall of our mudbrick house below a window. In winter they will receive some reflected light from the window, whereas in mid-summer the eave actually shades part of the solar cells, though this can be altered. **Photo 1** was taken in mid January, slightly after midday (by the sun).

Photo 2: The panels and supports are hinged to allow adjustment with the seasons. In this position they also act as an adjustable eave for the downstairs window, providing shade in summer but letting the sun inside the house during winter when the panels are hanging more vertically.

Photo 3: This has been our most useful and pleasant light. It is a 20 watt (W) **quartz halogen** globe. Halogen lights are apparently used in the flashing coloured lights of ambulances and police cars. It produces an intense white light.

We have mounted this one with a reflector at the end of a jointed tree branch. The arm can swivel to point in any direction and is jointed so that the vertical angle can be adjusted. With a bit of fiddling the light can be focused to produce a reasonable spot at any distance. We use this light if we want to do any fine work up to 7 metres from the light (which is as long as the room). This includes spinning, sewing, reading, playing musical instruments or washing up.

A similar light is mounted upstairs. This light has a very long arm so that it can swing to focus downstairs as well as up, or outside to help departing visitors. It has a cord pull switch with a very long cord, so that it may be turned on or off upstairs and down.

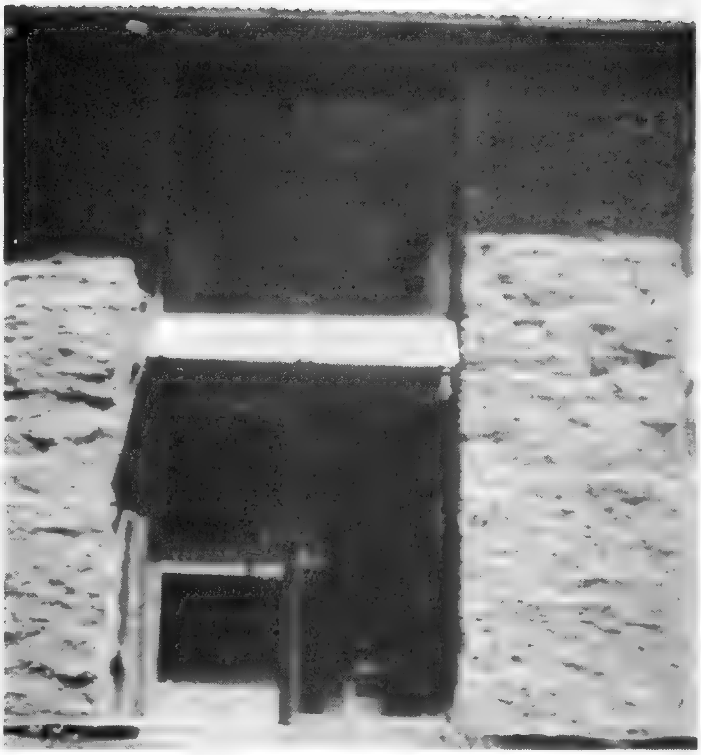
Photo 4: A quartz halogen bulb. This bulb lights a 3 × 3 metre room very well. I teach violin and classical guitar after dark in this room and find that this little bulb provides a better light than a 100W 240V globe would, perhaps because it is such a white light.

The pullcord switch is visible in the background. Using a cord instead of a switch saves several metres of wire, reducing voltage drop. In this room a reflector behind the light is not necessary. Luckily, we discovered this when the reflector fell off to show us how much better it was without it.

We also have a 15W incandescent bulb (normally used for a car indicator light). This bulb provides a yellow light which is very obvious in our house. We are considering replacing it with a 20W quartz halogen bulb with a suitable light-shade to provide a pleasant background light.

There will also be some 8W and 16W fluorescent lights, but they are not so good. We are going to try some better tubes so that people won't look so seasick! The 8W tubes are good as reading lights beside the bed, but if I want to do some spinning under a 16W fluorescent, I focus the quartz halogen to give enough light, and then I don't need to sit under the fluorescent anyhow.

The batteries are a weak part of the system, but we are hoping to purchase some secondhand Telecom batteries soon and give them a go.



It hasn't been possible to accurately measure the daily input from our solar panels, but **we consistently get more amps than the 4.4 amps for which the two panels are rated.** One reason is that the panels are still fairly new and may drop off a little.

However there are other reasons to consider:

☐ The window above the panels may make some difference (with its reflection).

☐ North-west Tasmania has the clearest air outsde the Antarctic and the proportion of ultra violet type radiation is higher than in many places.

☐ The solar panels operate at a cooler temperature due to the cooler air temperature and rapid circulation (Tassie winds!).

The highest reading, of just over 6.5 amps at nearly 15V (around 45W per panel), occurred during a sunny break while the rest of the sky was filled with fluffy white clouds. Obviously the clouds were directing light onto the panels. As well as explaining why one gets more sunburnt on a day with a thin cloud cover, it points out that the ordinary figures for hours of sunshine may not be an accurate indication of the amount of solar energy reaching the Earth's surface and waiting solar cells.

Most of our wire, light fittings and so on came from an auto electrical shop. We have cleaned out all his old stock of disused reflectors. You need to take care selecting a socket for a quartz halogen bulb due to its higher operating temperature. It will melt plastic on some sockets, which makes it hard to change the bulb and puts the light out of focus. The most suitable socket is for a dashboard light with the plastic removed down to where the pins of the globe would otherwise touch.

The halogen bulbs themselves are about nine times the price of an ordinary bulb, but the quality and quantity of light that they produce makes the extra cost worthwhile. Quartz halogen bulbs apparently last longer, so the cost may be offset in the long run.

In summary, while we haven't seen a winter through yet, we are very happy with the system so far. In most aspects it has been better than we expected.

RHUBARB SPRAY

For an effective spray against nibbling garden pests use an old tin or pot to boil up rhubarb leaves. Strain juice and allow to cool. Mix with Sunlight detergent or other soft soap, about 1 litre to 1 litre of juice. Dilute about 100 ml in ½ gallon of water. Spray when required.

Elizabeth Baker, Mt Barker, WA.

Useful Plants for the 21st Century

Unusual plants for sale by post or rail freight include black bamboo, giant bamboo, variegated bamboo, Aloe Vera, Natal plum, China tea, hazel and pecan nuts, hickory, macadamia, stone pine, black walnut, ginko carob bean, tree lucerne, lemon grass, globe artichoke, loquat, hops, white mulberry, olive, damson plum, guava, pomegranate, red, black and white currants, soapwort, tamarisk, jojoba, blueberry, sloe. Nursery open Monday to Saturday, 9 am to 6 pm.

The Botanic Ark Nursery.

1984-85 Catalogue.

Free from Steve La Valley, Cnr Sutton & Copeland Roads, Warragul, Victoria, 3820.

SUPER KRYPTON LAMPS

Great Scott!
A bicycle
filled with
Krypton gas.

Has Peter lost his pedals?

A reader wrote to me for some information and began his letter with "What has happened to you? In the last few **Earth Gardens** you seem to have lost your pedals!"

My tinkering combines bicycle technology, other peoples' wastes and a bit of new high tech, but you will find bicycle components appearing in the most unexpected places. I let the elements do some of my pedalling for me — with my bicycle wheel wind generators and bicycle hub dynamo Pelton wheel.

Even with high tech my bicycle plays its role. There would not be too many people in Australia, or anywhere else, who regularly cycle around the countryside with a computer strapped to their back!

Here I am going to write on another area where my familiarity with bicycle technology has had an effect, namely lighting, using efficient light globes developed for cycling — Peter van der Wyk.

By Peter van der Wyk

Most incandescent light globes have a yellowish light and do not give as much candlepower or lumens per watt (W) as do fluorescent tubes. Although 12V fluorescent lights are supposed to be less irritating on the eyes than 240V fluorescent lights (caused by the 50 Hertz flicker), I still prefer incandescent lights to fluorescent lights.

There are two brands of 6V Halogen globes available from bicycle shops. One carries the brand name **Super Lux** (made in Japan by Mitsuba Electric) and the other **Super Beam Dynamo Light Bulb — Extra Bright** (made in Japan by Sanyo Electric Co). With these Super incandescent globes I have a white light with an efficiency as high as that achieved by fluorescent lights. These are 3W, 6V tungsten-halogen globes filled with Krypton gas. They cost around $2.50 each.

Printed on the back of the Super Lux packet is the following message:

'Super-Lux' is a high lumen bulb for a bicycle filled with Krypton gas.'

I have found these Krypton gas bulbs very suitable for lighting homes (and my Tardis), even though the premises may not be filled with Krypton! The bulb has a high colour temperature for a bright, white beam and has a low interior blackening rate to give it a longer life.

Using metal jelly moulds, pie dishes and cake moulds as reflectors.

In order to use these Super lights in a low voltage home system you will need to make up some light globe holders with reflectors and lamp shades.

Globe holders for miniature threaded lamps can be purchased from any **Tandy-Radio Shack** shop (Cat No 272-354) for less than $2.00 per packet of six.

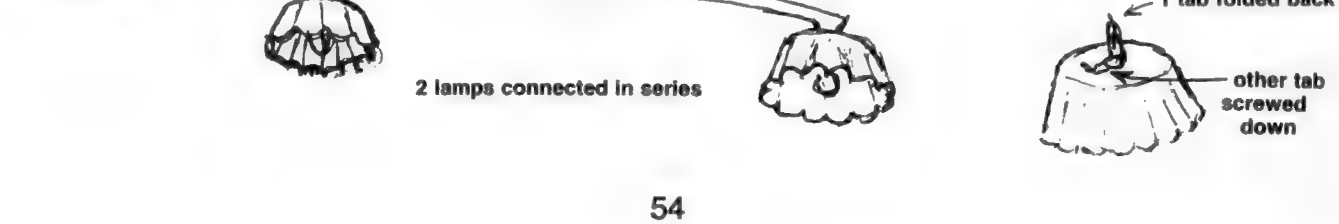
Room lights are a lot more efficient with reflectors over them and I found that small metal jelly moulds, pie dishes and patty-cake moulds are very effective reflectors for these lights. The metal reflectors also help to prolong the life span of the globes by conducting heat away from them.

Because these light globes are designed to operate on 6V (for bicycles) you must either connect them to a 6V power supply or connect two lights in series to link them to a 12V battery or system.

You need to drill a hole in the reflector that is just big enough to fit a globe holder quite snugly. There are two tabs on the globe holder onto which the electric wire can be soldered. One of these tabs is connected to the centre contact of the globe holder and the other connects to the threaded body (into which the globe screws) of the globe holder.

Each of these two tabs has two holes in it. Once you have pushed the globe holder into position in the reflector you can drill a hole through it that lines up with one of the holes in one of the tabs. The hole to choose is the nearest hole to the body of the lamp holder on the tab which connects to the outside threaded part of the lamp holder (**not** the one that connects to the centre contact).

If you are connecting these lights to a 12V system, you must make sure that you have two of these lamps in series. What I have done with most 12V lighting systems that I have made up for people is to connect one light to the end of a flexible figure-8 twin flex cord and the other soldered



into one of the two wires going back to the power source.

I have put this second light fitting one or two metres away from the first to give a good light distribution. If you look at your figure-8 twin flex insulated wire at this point you will notice two wires side by side. You can cut through one of the two wires at this point. I suggest that you cut through the wire that connects to the outside of the light fitting at the end of the wire (and **not** the wire that connects to the centre contact). You can now solder the second light fitting to the two open ends of the wire that was continuous (before it was cut).

Cautions: Remember that these Super bulbs operate at high temperatures and must be treated with great care. You shouldn't touch them with your fingers when they are hot — rather hold them in a piece of cloth. Neither should you use these lights over your stove as oil vapours from cooking will cause dirt to collect on the globes and shorten their life span. Don't use plastic reflectors.

Watts up Doc?

By Jacqueline French

"Hey, Charlie, there's a lass in here wants to know about our wattages (chortle, chortle)."

We've had a 'solar house' for over two years now, starting with 12V power for lights, music and radio, then for the last year using an inverter to run our 240V appliances such as an automatic washing machine, blender, power tools and vacuum cleaner.

We use this power source for everything except appliances with a major heating element, such as an electric stove, heater or hot water system, none of which we need or want. However, all of these are possible with a photovoltaic system, if you are willing to pay for enough solar panels and batteries.

We're enthusiastic about our system. For a total cost of $5,500 (at 1983 prices), we get the power we need, no bills, blackouts or brownouts (the last three of which are common around here). This is the same outlay as it cost a friend who lives under a power line to connect to the grid. Four bills later, he's kicking himself. Most people don't realise that connection to the grid actually costs something because it's usually added into the price they pay for the house.

It's nice to be smug in the local shop: "Power failure? What power failure? We didn't notice!" It's nice to be the only family around without melted ice cream.

A good thing about photovoltaics, as opposed to other alternative energy sources, is that you can do as we did and start with one or more solar panels and batteries and add more according to energy needs and money supply.

We converted to 240V when Edward's birth prompted the gift of our choice of washing machine from my mother. As E. grows up and wants to power a rock band or a computer complex, we'll be able to add more panels.

Problems: But there have been problems and other aspects which **we** find fun, but which may not appeal to others. You need to check battery levels regularly so that they aren't discharged too much; to try to do your washing in the morning when the batteries are charging well and can quickly make up the loss (less strain and longer life for the batteries) and to add distilled water to the batteries occasionally.

Our 'solar house'

You must also learn to tot up the wattages of appliances when you buy them. This can be difficult, especially when manufacturers either don't know the wattage of their machines, or are unwilling to tell you what it is. This fact really surfaced when we bought the automatic washing machine. We needed to know its peak and its average loading. No manufacturer could, or would, tell us.

After getting the run-around half-a-dozen times: "No dear, what you need to know is volts — 240 dear, just plug it in, you don't need to worry your little head about things like that."

"Watts? You mean volts don't you? Never heard of watts. Henry, you ever heard of watts?"

"Hey, Charlie, there's a lass in here wants to know about our wattages (chortle, chortle)."

To avoid defaming well-known manufacturers and department stores, I won't mention whose reps they were.

So we stopped asking silly questions of silly people, plugged in our inverter in the homes of friends and experimented to see whether or not we could run their washing machines.

Well, we got one, lumped it back home, and found it wouldn't work. It seems the current kept flicking on and off as the washing machine went through its cycle, which confused the inverter (excuse the **anthromorphism,** I'm better with animals than electrics).

Solution: Now we keep a low wattage electric light turned on at the same time as the washing machine. It draws a constant current from the inverter and everything works well. Perhaps this 'constant current' solution will help people who have problems running stereo players with an inverter?

Next problem: It often happens that you can't get clear radio reception when an inverter is switched on; this includes the inverters used in fluorescent lights. The inverter sends out its own transmissions, none of which are interesting. The trouble is that fluorescent lights are the most energy efficient and I mostly like to listen to the radio at night.

Solution: Use a low energy **quartz halogen light,** 12V, without an inverter in it, while the radio is on. So-called 'shielded' fluorescents aren't worth the money because the interference is nearly as bad. Someone suggested making a wire bird cage shield around the light. This would probably work, but sheer aesthetics and the easier quartz halogen light solution have deterred us from trying it.

Other problems? Well, the inverter has blown up twice. Everyone was very apologetic and fixed it immediately, including the design fault that caused the explosions. Still, a few bugs in the system can be expected with such new technology.

There's such a lot of rubbish talked about photovoltaics, such as the terrible **Nationwide** (now extinct) programme on ABC television in 1984, which expounded on how solar gadgets only work when the sun is shining — rather like saying you can only use mains power when it's raining in Tasmania. Power can be stored, you idiots! **Nationwide** also seemed to confuse photovoltaic systems with solar hot water collectors.

Our solar panels merely charge our batteries. The batteries power our appliances. We can store as much power as we have batteries to store it in and use it when we will.

How about the gentleman (nameless), sitting in our kitchen eating ice cream made using a blender and an ice cream machine, in our well lighted, vacuumed house, wearing a freshly-laundered shirt listening to Beethoven blaring from the speakers, declaiming "Photovoltaics are simply not valid in a domestic situation"?

So many 'experts' knew the state of the art a decade ago. Now the technology has entirely changed. It's like comparing a **Model T Ford** with next year's model — "Motoring is great fun, of course, but it will never replace the horse".

I've grown attached to our photovoltaic system. It's a bit like having a hive of bees and watching them make honey for your later enjoyment. A little light falling on the panels starts them charging. It also beats paying electricity bills.

BUMPER HARVESTS

By Esme Hobba

Being self-sufficient in food (or almost) is something that many of us aim for but frequently find very difficult. My mother-in-law's efforts over 70 or so years prove that it is not only possible but that it can be done on a suburban block and in all climatic extremes.

Born and bred on a South Australian farm where she learned the arts of survival on a shoestring, she began her married life in the arid mining town of Broken Hill and raised six children there and was also 'mother' to a passing parade of people that became countless.

Her table was always laden with good things from her garden.

'Retired' in Adelaide she continues to do the same sort of thing in her city garden. She has never bought a tin of jam or fruit in her life, preserving and making all her own.

Here is the list of fruit and vegetables that came from her suburban block in 1983-1984.

Fruit 1983

limes	46 buckets — light crop this year
mandarins	964 fruit — light crop this year
lemons	1,974
oranges	95
apricots	6½ buckets
loquats	8 buckets
peaches	23½ buckets off two trees
nectarines	3½ buckets
plums	8 buckets (88lbs)
almonds	56lbs
grapes	110lbs picked (birds got the rest)
rhubarb	36lbs
strawberries	2lbs (very disappointing)

Vegetables 1983

beans	28½lbs
onions	20lbs
pumpkin	122lbs
potatoes	16½lbs
peas (snow peas)	3lbs
tomatoes	51lbs
beetroot	6 bunches
silverbeet	15 bunches
carrots	15 bunches
parsnips	12 bunches
turnips	12 bunches
spring onions	4 bunches
lettuce	10
cabbage	8
cauliflower	7
capsicum	18
parsley	32 bunches given away (beside our own)

Also herbs, such as thyme, marjoram and sage are always available.

Fruit and vegetables harvested in January-February, 1984

tomatoes	39¾lbs
beans	25½lbs
potatoes	19lbs
pumpkin	134¼lbs (whole season)
onions	16½lbs
capsicums	11 fruit
cucumbers	11 fruit
beetroot	2 bunches
turnips	2½ bunches
carrots	6 bunches
apricots	4½ buckets
peaches	19 buckets
nectarines	9 buckets
plums	60lbs
lemons	311 fruit
passionfruit	95 fruit
rhubarb	13lbs

When Mum sent us this list she wrote:

"This is not to boast but to show just what a suburban garden can produce plus the great help to the budget. And it is not over-estimated. . ."

Shall we try again?

more land lines

For sale — in the Bordeaux region of France, a 1.5 hectare (4 acre) allotment with traditional stone house. Situated 15 km from Libourne and one hour from the Atlantic coast. Land flat, yet surrounding landscape is hilly. Includes all fencing and a dam. Suitable for agriculture. Stone house totally restored with exposed beam features and all services and amenities. Large verandah and garage. Price equivalent of 900,000 French Francs (approx $A130,000).

Write to Annie Gaborias, 129 Halsey Road, Airport West, Victoria 3042.

Hello Earth Garden readers in the beautiful Beechworth district. My partner and I and infant son wish to find accomodation from July, when we intend moving to the district. We will either rent, buy (very modestly) or caretake and would be available to share with elderly people who need help with gardens and maintenance. We look forward to a cuppa with all who respond. Pene Braybrook, 7 Canara Place, Lavington, NSW 2641. Telephone: (060) 25 7028.

Ten magnificent acres on the shores of Lake Cooriabah, opposite Noosa River National Park. Only 10 minutes to Noosa Heads and all tourist spots such as Everglades, Elanda Point, etc. Good sandy loam, five acres cleared, the rest natural forest with lovely trees and orchids. Fully fenced, power, telephone, bitumen road. Own private easement to beach for bathing, fishing and crabbing. A millionaire's allotment at $49,000. No offers accepted.

Ron Haines, PO Box 53, Goodna, Qld, 4300. Phone: (07) 288 2981.

BRICK MACHINES

About 12 months ago we bought 11 acres with an old brickworks, still complete, in Springwood, Queensland. With the equipment there are two brickmaking machines which we would like to sell to help with other projects on our block. We could arrange transport to any part of eastern Australia. These machines could be easily adapted to making mudbricks on a large scale.

If you're interested in these machines, please phone Dutchie on (0070) 65 2210, P. Nyskens and family, Box 69, East Silkwood, Qld 4857.

To everyone who replied to our land line in Earth Garden and did not receive a reply from us — thank you for your interest, the land is no longer for sale.

T. & C. Coff, Wivenhoe, Tasmania.

For sale — Mendooran (central west), 14 acres freehold, maintenance free, two bedroom cottage, new family room (7m x 5m) and pool table, some furniture, piggery, three dams, fenced, fruit trees and garden, 1 km village and school, 45 mins to Dubbo. Price $63,000.

20 acres freehold bitumen road, old cottage and stables, river frontage, choice arable land. Price $28,000, or will sell as one, $85,000.

Mrs Norma Davies, Railway Road, Mendooran, NSW 2842.

For sale, one 25th share in 1,000 acres, Kyogle area. Established cottage, road, water, springs on this share. Collective land shared equally. Council road to front gate, 2 km to school bus. Phone has been applied for. Price $19,000 o.n.o.

Interested parties contact Brendon Isbister, Eden Creek Road, via Kyogle, NSW, 2474.

For sale — 258 acres undulating natural paradise, gums, ironbark, cypress, two dams. Council approved steel-timber framed 42 ft x 25 ft shed, 8 ft verandah, concrete slab, Hardiflex cladding and fully lined. Sliding aluminium door, large windows, overlooking larger dam. MF165 tractor, 7 ft blade, scarifier, plough, pump, irrigation pipe. School bus passes front gate, 20 minutes to Miles. Price $60,000 negotiable.

Write: Mr & Mrs F. J. Pokorny, 'Gum View', C/- PO Drillham, Qld 4424.

South-eastern NSW. $15,000. Approx 42 hectares (100 acres) of beautiful mountain bush for sale on a tenants-in-common basis with the right to freehold at a later date. The property has beautiful views, is watered by creeks and springs and abounds with wildlife. It is about an hour's drive to the coast or the snow.

For details phone (0648) 85279 or write S. Kavanagh, PO Box 31, Nimmitabel, NSW 2631.

Young women are invited to share community life on our 44 acre rural property at Dondingalong for one or two weeks, August September 19 to September 30, 1985. Opportunity for learning meditation, self sufficiency, crafts, etc. Share in daily jobs and keep house rules. Food and accommodation free. Last year 20 attended and enjoyed it.

Write to Sister Helen, Sisters of the Church (Anglican), House of Prayer, Dondingalong, via Kempsey, NSW, 2440.

Outlook Farm is close to the Kinglake National Park, about 60km north-east of Melbourne and south of Seymour. The project, set up as a Trust by a group of local people, includes a comfortable community house for up to 20 jobless adults and a small farm. Unemployed people over 18 (singles or couples) are welcome if they are willing to share jobs such as building, gardening, woodcutting, animal care, cooking and housework. Full charge $36 a week. Paid casual jobs are sometimes available locally. No drugs, alcohol, cats or dogs are allowed on the premises.

For further information contact Helen Meggs, Honorary Secretary, Outlook Farm Trust, Kinglake, Victoria, 3763. Phone: (057) 86 1285 or the residence (057) 86 1514.

Co-operative shareholders sought for 629 acre property at Papinbarra. Land includes over 250 acres of beautiful rainforest. Seven current shareholders, three females, four males and one small child. Building is in initial stages. Seeking gentle vegetarians interested in permaculture and living ecologically. Shares $10,000.

Contact: Magic Mountain Permaculture Co-operative, PO Box 400, Wauchope, NSW, 2446. Phone: (065) 87 6125.

Chance for a young man to share a small nursery and gardens with a very active old man. Garden tied in a trust and can never be sold. It covers 10 acres of ground in the heart of Mareeba on a river. Fruit and vegetables organically grown, 4½ acres of tropical gardens and a health clinic is planned for the future.

Write for full particulars. Please send photo and details of aims and ambitions to Bruce Andrews (The Old Hermit), PO Box 186, Mareeba, Qld, 4880. Phone: 92 1067.

Postal problems

Dear friends,

It's ironic. Just when we finally persuaded so many readers to become mail subscribers, a complication came up which was beyond our control – the mail began to go bananas! We apologise to everybody who received their copy of Earth Garden 45 late and especially to those who received no copy at all.

Excuses we received ranged from the new postal exchange to strikes and even Chinese New Year. It wasn't our fault and we're sorry! We always post out subscribers' copies first before delivering each issue to bookshops and newsagents. We hope this issue reaches you on time.

When EG44 went out at the end of last year we weren't able to enclose a reminder slip like the blue and pink forms of the previous two years. As a result, many people weren't aware that their subscription was due. We sent out reminders and have been inundated with yellow renewal forms ever since. We welcome you all back and thank you for your support. This issue you will see that we have opened up subscriptions for the next four issues, from EG47–EG50.

While we're on the subject, we have to admit that we are a bit behind in our correspondence (letters not orders). Apart from all the resubscriptions and making up EG46, Keith has just put the finishing touches to a manuscript for a new book, **Energy Works!** It covers home energy systems – solar electric, wind and water power – and should be in print by the end of this year. We'll keep you posted.

The sixties

We met each other in the 1960s. It was an exciting decade for us, the most formative in our lives – way beyond 'flower children' and 'stoneground wholemeal!' – a time when many of the social values we promote in Earth Garden first came into prominence. ABC television caught some of our views on the youth culture of the 1960s on film for the episode of **A New World for Sure** which will be shown on Channel 2 at noon on July 2, 1985.

Peace & love, Keith & Irene

BOOKS & BACK COPIES

EARTH GARDEN, PO Box 378, Epping, NSW, Australia, 2121

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The Third Earth Garden Book — $10.95 .... $ ....

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No need to cut this page, just send us the details in a letter if you prefer.

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☐ Please accept my subscription to Earth Garden.
I enclose payment of $11.00 for the four quarterly issues, EG47-EG50, including postage.

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Back copies

EG1: Move out . . . food co-ops . . . earthworms . . . Kibbutz & Moshav . . . herbs . . . Fred Robinson . . . bean sprouts . . . Montsalvat . . . organic growing . . . comfrey.

EG2: Start a garden . . . Neil Douglas in the garden . . . Keyline system . . . Kiewa farms . . . drying & storing food . . . hydroponics . . . recycling garbage . . . nutrition.

EG3: Herbs . . . making compost . . . fast fertiliser . . . all about goats . . . mudbrick making . . . water wheel . . . Teapot dome . . . bread . . . salads . . . pottery . . . spinning . . . vegies.

EG4: A pleasant treatise on the honey bee . . . working bees . . . sources . . . back to the land in Tassie . . . the transition . . . black sheep . . . tanning . . . candles . . . bread . . . domes . . . donkeys . . . wall-hanging.

EG5: The wind — windmills . . . windpumps . . . generators . . . raku pottery . . . Cinva ram . . . keeping poultry . . . Hamburghs . . . moon planting . . . vegan way . . . fallout shelter . . . just 9 acres . . . garden tools.

EG6: Solar 1 — sun cults . . . solar cooker . . . sundials . . . the lost world . . . Clifton Pugh . . . concrete house . . . Shalom . . . Cajun cooking . . . animal care . . . horses . . . spirit of Nimbin.

EG7: Solar 2 — Hot water . . . solar ideas and sources . . . good company . . . Angora goats . . . make a leather bag and belt . . . survival skills . . . mushrooms . . . natural dyes . . . mudbricks again . . . flight from the city.

EG8: Gas power — methane digester . . . power from the pig pen . . . by truck to Tassie . . . just ¼ acre . . . cumbungi hats . . . Harmony Farm . . . inkle loom . . . tapers . . . country cottages . . . a frame . . . school gardens . . . sourdough.

EG9: Alternatives to petrol — LP gas . . . Mary's place . . . buliding with stone rubble . . . oats . . . ducks . . . macrobiotics . . . horse and cats . . . rug frame . . . natural farming . . . how to kill a pig.

EG10: Granite house . . . bamboo flutes . . . geese . . . chip heater . . . make beehives . . . mudbricks yet again . . . Jarrah shingles . . . methane . . . Bio-dynamics . . . tandem seaweed . . . index (EG1-9).

EG11: Water — hydraulic ram . . . water wheels . . . miller's tale . . . okra . . . seed primer . . . heavy horses in Quebec . . . tomatoes . . . soft technology . . . start with hens . . . wine . . . hard cheese.

EG12: Keeping food — drying . . . salting . . . bottling . . . storing . . . mediating . . . tahu . . . tobacco . . . tropic delights . . . plant propagation . . . plans for a solar water heater (part 1) . . . solar stills . . . solar cooker . . . Moora Moora.

EG13: The bush — men with axes . . . woodchips . . . native garden . . . flora & fauna . . . national parks . . . wild places . . . wildlife . . . bushcraft . . . solar hot water plans (part 2) . . . straw & paper garden . . . producer gas . . . Jerusalem artichokes.

EG14: Self-sufficiency — gardens for all . . . Botobolar vineyard . . . Abbie's goats . . . Terania Creek . . . millet . . . Crusoe . . . Thoreau at Walden . . . Helen & Scott Nearing . . . healthy soil . . . we built in stone.

EG15: A Lytel Herbal — growing and using herbs with text and illustrations from the classic 16th century herbals with modern comentary . . . companion herbs . . . herb sources & books . . . index to EG15.

EG16: A Lytel Herbal (Part II) — comfrey, lavender, wormwood, yarrow . . . people & the land . . . poultry shed . . . Moora Moora . . . peafowl . . . goat notes . . . basic beekeeping . . . building in pise (rammed earth) . . . miracle pump.

EG17: All about fencing . . . dry stone walls . . . make nets . . . your own soap . . . Autonomous housepole shelter . . . breeding black sheep . . . owner-builders . . . asparagus . . . Aeolian harp . . . Khaki Campbells . . . D for duck.

EG18: Fruit garden — oranges . . . lemons . . . olives . . . nuts . . . tropical fruit . . . fodder trees . . . build a road . . . homebirth . . . wood-fired pottery kiln . . . Cinva-ram cottage . . . earthworms . . . hulling sunflower seeds.

EG19: Wood heat — pot bellies . . . Jotul . . . cooking . . . making a quid . . . build a storage cellar . . . bushfires . . . Sunrise Farm . . . stonefruit . . . macadamias . . . budding . . . binding your EG collection . . . tree planting.

EG20: Apples . . . pears . . . cordon & espalier . . . avocado . . . the Zolins . . . pollen . . . build a haybale pig house . . . love your cow . . . rose hips . . . the mudbrick flats . . . solar homes . . . gourds . . . preserve fence posts.

EG21: Womancraft — all articles by women . . . setting down . . . earthly arts (interview with Abbie Heathcote) . . . axewomanship . . . glove puppets . . . joy of spinning . . . time to weave . . . easy rugs . . . lambing . . . Sumatran house . . . mudbrick weekends . . . the group . . . old roses . . . index (EG10-20).

EG22-23: Australian Access 150 page sourcebook — Aborigines . . . organic food growing . . . permaculture . . . Bill Mollison . . . earth building . . . wind . . . solar . . . water power . . . solar cells . . . water supply . . . bucket pump . . . with access to groups, books, tools and techniques . . . small scale technology.

EG24: Place — 24 groups and new settlers share their place outside the cities . . . including Mare Carter . . . Ron Edwards . . . Neil Douglas . . . Gundaroo Store . . . Rainbow Region . . . Universal Brotherhood . . . Mt Oak . . . Moora Moora . . . bush ashram . . . personal stories from 20th century pioneers.

EG25: Australian Access 2 — 130 page sourcebook — livestock acquaculture . . . fencing . . . wombat gates . . . killing . . . tanning . . . food and nutrition . . . Dorothy Hall . . . a year's supply of food . . . grain grinders . . . mincers . . . methane basics . . . wind generator . . . low energy solar homes . . . greenhouse . . . more tools & techniques.

EG26: Colour spread on the earth-built kasbahs of Morocco . . . owner-builders report on homes of stone, timber and mudbricks . . . build a slab cottage . . . tree felling . . . two solar-electric homes . . . Earth Garden survey . . . survival vineyard . . . acorns . . . fruit without poisons . . . compost dunny . . . home-made gas . . . quandong . . . pumpkin recipes.

EG27: Plants we eat — 100 tropical food plants for Australia (part 1) . . . plant protein . . . 16 legumes to grow & eat . . . like winged bean . . . pigeon pea . . . lablab bean . . . cowpea . . . sword bean . . . chickpea . . . sugar pea . . . mung bean . . . soybean . . . adzuki bean . . . life-raft . . . blacksmithing . . . bluestone building . . . mudbrick solar home . . . wok cookery . . . choko . . . homebirth.

EG28: Animal stories — by packhorse through the Victorian Alps . . . horse & buggy . . . Mary's black sheep . . . the woolly Merino . . . Timbertown bullocky . . . tropical food plants for Australia (part2) . . . stringybark baskets . . . tamarillo . . . buying bees . . . solar trike & fan . . . make a poker . . . persimmon . . . seed patents.

EG29: Mudbrick primer — the monastery at Stroud . . . six builders & their mudbrick experiences . . . mud barbecue . . . Bob's bonza brickmaker . . . earth floors . . . curved walls . . . herbs on the roof (sod it!) . . . low energy design . . . the cutting axe . . . food plants for tropical Australia (part 3) . . . coconut mats . . . mango mania.

EG30: Organic growing guide . . . the organic idea . . . food without poisons . . . making compost in heaps, pits, trenches, boxes, bins & barrels . . . carpet the garden . . . wot no digging? (mulch it instead) . . . organic methods for the semi-arid West . . . compact growing boxes . . . a traditional farmer . . . preserving figs . . . tasty tempeh . . . the Bornhoffen story . . . pasta . . . glass bottle mosaics . . . trickle watering.

EG31: Energy alternatives at work — make your own hydraulic ram . . . second-hand windpump . . . mudbrick sequels . . . freezing food . . . blanching . . . choosing a freezer . . . zucchini glut . . . drying fruit . . . all about sprouts . . . fireless cookers (hot boxes and baskets) . . . camp oven . . . growing greens in the wet . . . building a log house (part 1) . . . index (EG21-EG30).

EG32: Trees — tribute to trees . . . St Barbe Baker . . . tree tales . . . how a tree works . . . the miracle of a leaf . . . native trees from seed . . . trees on the farm (interview with Tim Cox) . . . forestry directory . . . dieback . . . renewing the land . . . coppicing . . . the woodchipper blade . . . value of trees . . . artist in the bush (interview with Neil Douglas) . . . low-cost country home building . . . cob does the job . . . building a log house (part 2) . . . square foot gardening.

EG33: Tenth anniversary issue . . . use of wood . . . timber felling . . . lifting poles . . . post-and-beam design . . . building a log house (part 3, concludes) . . . parquet floors . . . backyarders' livestock . . . goats . . . rabbits . . . fowls . . . portable hen-house . . . dandelions . . . wild tea party . . . bush regeneration . . . planning figs . . . dry pit loo . . . blackberry-eating beetle . . . weeding tools.

EG34: A look at China (extra colour photos) — the commune system . . . teaching the masses . . . trees of friendship . . . forestry . . . fish farming . . . recycling human wastes . . . biogas . . . transport . . . travel notes . . . Ron Edwards writes on earth building the Chinese way (and tea) . . . making the farm pay . . . places . . . bread & jam . . . rainforest . . . eco-gardening.

EG35: Bees and trees — Tributes to Richard St Barbe Baker . . . tree tales . . . backyard bees . . . hiving a swarm . . . St Barbe's bees . . . a beginner's kit . . . beekeeping books, equipment, clubs and information . . . nectar-yielding eucalpyts . . . self-build housing . . . mudbrick workshop . . . earth wall footings . . . make your own solar collector . . . a good workdog . . . magpies . . . wormiculture . . . nuclear nightmare . . . waste to compost . . . fodder trees.

EG36: Settling in at Nimbin — glimpses of Nimbin . . . settler's tales . . . interview with with a woman builder . . . handbuilt homes . . . a pawpaw plantation . . . simple, cheap, solar electric systems . . . passive solar 'rules of thumb' . . . biological building . . . farm sructures . . . a potty garden . . . choughs . . . bush birds . . . the inn at Ollantaytamboo, Peru . . . more fodder trees . . . make a lavender sachet . . . the food page . . . nuclear-free Australia?

EG37: Hard times — sidestepping the recession . . . new paper from old . . . newspaper fuel . . . rags to rugs . . . barter . . . when the lights go out . . . slush lamps . . . sawdust stove . . . tin can cooker . . . the hungry 30s . . . Depression dodges . . . Happy Valley humpies . . . hand grain mills . . . 120 money-saving hints . . . make soap . . . whitewash . . . polishes . . . cleansers . . . glue . . . insect repellents . . . passive solar design . . . roof ponds . . . donkeys at work.

EG38: Access survey — where to buy alternative energy equipment . . . electric grain grinders . . . Hard Times tucker . . . back to basic bread . . . steam cooking . . . sustaining soups . . . no-meat meals . . . solar dried bananas . . . yoghurt . . . summer cheese . . . cheap meat meals . . . home-brewe beer . . . coofee form tree to cup . . . a Gujarati village . . . Noel's Island . . . Wild Country Park . . . Depression days . . . earth walls and bushfires . . . mudbrick hermitage . . . the electromagnetic house (building biology) . . . Self-Build success . . . Hondas on the farm . . . sweet cherries . . . winter in the vineyard.

EG39: Alternative technology — low-voltage small-scale . . . run lights and TV from your car battery . . . Peter Pedal's bicycle wheel wind generator . . . farm energy system . . . fire without matches . . . mushfire defensive house . . . earth building notes . . . the indoor climate (building biology) . . . backyard food growing . . . a sense of humus . . . try herbs . . . rosehips . . . avocado growing guide . . . laying out a farm . . . the vineyard in spring . . . dairy notes, 1898 . . . bread happiness . . . old-time household hints.

EG40: Communities — "constructive alternatives" . . . Communiversity . . . village in the making . . . start a food co-op . . . making the co-op work . . . three in a caravan . . . Scott Nearing — a good life . . . how we make cyder in Tasmania . . . trees for fire protection . . . tree planting at Undalya . . . the self-built house . . . The Muddies Manual . . . raw earth . . . earth floors . . . bushfire resistant housing . . . boiling the billy . . . hares . . . tetanus . . . laying out a farm (part 2) . . . olive oil . . . cashew nuts.

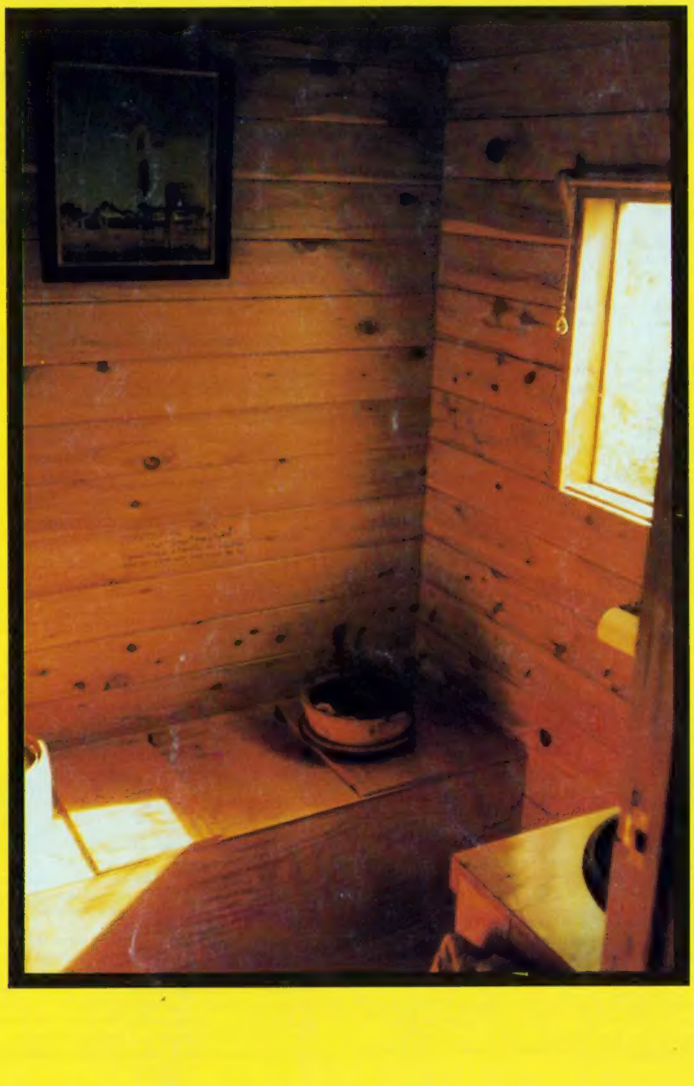
EG41: Wandering — across the Sahara . . . Uganda . . . in Australia with pack donkeys & by horse float . . . the lure of Timbuktu . . . adventure travel access . . . Sahara mat-tents . . . Moora Moora 10 years on . . . build a Savonious rotor bike wheel wind generator (Peter Pedals) . . . energy access . . . yeastless breads . . . dampers . . . build a shadehouse . . . food co-op books . . . recipes for real potatoes . . . sheep stories . . . index, EG31-40.

EG42: Building — earth-covered homes . . . the Burra dugouts . . . our stone home (slipform technique) . . . flood-defensive house . . . build a Chinese pigsty . . . mudbrick notes . . . compost power (methods of Jean Pain) . . . tomato tips & treatment . . . herbal insecticides . . . deep ecology . . . EG reader survey . . . breaking in the Fergy . . . earth travel . . . the Tuareg . . . bourgeois communes!

EG43: Earth domes & vaults — Eukey pink palace . . . rendering earth walls . . . bush stone masonry . . . mudbricks . . . farm systems . . . bush shower . . . Peter Pedals' Pelton wheel & incinerator hot water . . . remote power systems . . . low voltage wiring . . . sheet metal pans . . . sheep . . . donkeys . . . horses . . . farming with wildlife . . . Daintree . . . travelling with kids . . . energy access.

EG44: Plug in the sun — solar electric systems . . . 12V to 240V systems . . . first-hand reports . . . solar panel booster . . . the Solar Trek . . . batteries . . . inverters . . . alternative washdays . . . Peter Pedals on petrol, Pelton wheel & pedal-driven washers, how to make a pedal drier and 12V computers . . . beans for fish . . . using water wisely . . . outdoor cookstove . . . Mebbin Springs . . . greens for the fowls . . . mudbrick methods . . . sheepskin rugs . . . Keith & his Mac. More!

EG45: Waterworks — shifting water with sun, wind and water . . . solar electric pumps . . . hydraulic ram . . . gravity feed . . . fuelless Platapump . . . windmill & pulley . . . water power . . . Brisbane 'no mains' solar powerhouse . . . cyclone-defensive house . . . mudbrick walls . . . Melbourne's solar workshop . . . a woman goes bush alone . . . grow bunya nuts . . . collect eucalyptus seed . . . propagate bamboo . . . cardomum . . . tree crops miscellany . . . Babaco . . . beekeeping . . . Peter Pedals writes on 12V appliances & battery problems . . . greeting cards . . . homemade suntan lotion . . . finding true north . . . supermarket survival . . . self-sustaining garden . . . 'no volts' ironing . . . bird scarer . . . graphics on the Macintosh . . . more!



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